AN ANALYSIS OF THE HEALTH CARE NEEDS OF THE JAMAICAN ELDERLY:

POLICY RECOMMENDATIONS FOR PRIMARY HEALTH CARE

By

KATHRYN GRACE CAMILLE MITCHELL-FEARON

(Under the Direction of Joel Lee)

ABSTRACT

Jamaica is experiencing a rapidly ageing population, within a volatile economic and social environment. This limits the adoptability of developed country evidence and makes it important for Jamaica to quantify its own ageing related trends, and to respond in a targeted, context specific manner.

This study has the primary goal of producing elder-sensitive primary health care (PHC) policy recommendations suitable for the Jamaican government. This task will be accomplished through: i) a review of international and national PHC and ageing frameworks; ii) the use of survey data to develop an epidemiological profile, and a PHC access and utilization profile of the elderly; and finally iii) through the use of evidence from systematic reviews and randomized controlled trials.

The health profile of the elderly revealed high rates of chronic diseases (76.4%), cognitive (11%) and mental (16%) impairment, and falls (21.7%) in this population. The ability to undertake activities of daily living (ADLs) was high in this cohort (93%), while ability to undertake instrumental activities of daily living was more moderate (77%).

Generally, women reported a higher disease burden than men, and disease prevalence showed a positive relationship with age (i.e. the over 80 group had the highest disease burden). In terms of access and utilization, most persons (93%) reported having a routine source of care and annual check-ups (80%), however preventive services were significantly under-utilized especially in the public sector. The major barriers to accessing services were reported as: cost (81%), drug availability (23%), waiting time (21%), and transport issues (14%). In spite of a 'no user fee' policy in the public sector, 43% of the cohort reported having paid for services.

PHC recommendations focused on addressing barriers to care identified from study analysis and from international literature. Recommendations were developed to be practical, applicable and most of all financially viable in the Jamaican setting. Most policies were developed for easy integration into already operational systems, thus increasing the likelihood of implementation success, and sustainability.

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DEDICATION

This dissertation is dedicated to my parents whose many acts of love, both tiny and massive, have lit my passion to be of service to others. Their unwavering support and selflessness has over the course of my life blinded me to the option of failure or defeat. They have taught me the value of continuous learning, perseverance and hard work, but most of all they have taught me the value of respecting all others. For this I attribute the successes I have had, and those that still lay before me.

This dissertation is also dedicated to my husband Ian, who has been steadfast by my side, even while hundreds of miles away. He has been a constant force of strength and comfort, encouraging me and seeing more of my potential than I could ever see in my self. His support has sustained me through one of the most challenging times of my life… he is the calm to my perpetual storm, and for that I will be forever grateful.

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I am grateful to the staff of the Mona Ageing and Wellness Centre, under the directorship of Professor Eldemire-Shearer, for their continuous support and intellectual stimulation during this period. It has truly been an honor to learn about the ageing process, and the ageing needs of my country from premier experts who have kept their doors (and cellphones) always open to my many queries.

Last but not least, there are people in one's life who make success both possible, and rewarding. In addition to my parents and my husband, these people are my sisters: Nyika Noelle Smythe, Kimberly Villiers, and Zahra Miller. Through all the exam fears, the exhaustion of travelling, and all the late night tears, you have helped to maintain my sanity and to lighten the heavy load. I wish us a lifetime of laughs and friendship, and look forward to supporting each of you through your own doctoral process.

To my other loved ones, your love, and prayers have not gone unanswered. I have felt them all, and I am most humbled and grateful to be on the receiving end.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

1.0 Overview

The introduction and literature review chapter will entail a summary of information on 'ageing' worldwide and in Jamaica, followed by a summary of the shifting epidemiological profile of the island and its elderly population. The epidemiological and ageing profiles will then be interpreted through the lens of primary health care, and its relevance in maintaining the health of the elderly. The access and utilization patterns of primary health care will be better understood through the use of the Andersen-Aday behavioral model as applied to the elderly. Finally, the chapter closes off by documenting the need and rationale for undertaking this course of study and investigation.

1.1 Background on Jamaica

Jamaica is the largest English-speaking country in the Caribbean, and has a land mass of approximately 11, 424 km^2. The island is surrounded by the Caribbean Sea and is 160km west of Haiti and 150km south of Cuba. (Pan American Health Organization (PAHO), 2012) Jamaica is divided into 14 parishes, with the southeast coast housing the largest city and the capital of the country, Kingston.

Political organization

Jamaica gained independence from Britain in 1962, and since then has maintained a stable, democracy. The government is composed of a Parliament (Senate and House of Representatives), and a cabinet of Ministers, and is headed by a Prime Minister. Along with being a commonwealth state, Jamaica is one of 15 member states of the Caribbean Community (CARICOM) that allows free trade, and a single market economy within the region.

As described by the Planning Institute of Jamaica (PIOJ), and the Ministry of Foreign Affairs and Foreign Trade (MFA) (2009), the Government of Jamaica aims to provide "a social welfare system that is responsive to the needs of the vulnerable population and contributes to maintaining human dignity" (p.7). The dominating political approach may be viewed as a 'Christian Democratic welfare state', as the Government owns the responsibility to care for all Jamaicans who are unable to do so. Contractions in the State's ability to undertake such welfare functions have in the past been hampered by structural adjustments introduced by the World Bank and International Monetary Fund (IMF).

Economy

Jamaica is classified as an upper middle-income country by the World Bank, and is classified within CARICOM as being at a 'more advanced' stage of development. The other CARICOM states in this category include Barbados, Guyana, Suriname, and Trinidad and Tobago. Jamaica's gross domestic product (GDP) growth rate fell from a peak of 2.7% in 2006, to negative 2.8% in 2009 (Chao, 2013); its annual GDP is approximately US$15.07 billion (World Bank, 2011), with the GDP per capita being

approximately US$4,300 annually (World Bank, 2005). The GDP per capita is below the Caribbean average of approximately US$5,400US, and is significantly less than other CARICOM islands such as Trinidad and Tobago, and Barbados who stand at $14,600 and $17,000 respectively (World Bank, 2005).

The Jamaican economy has been mostly driven by insurance and tourism, and is supported by the mining of minerals such as bauxite. Sugar, banana and rum are also exported to earn foreign exchange (PAHO, 2012).

Jamaica has an unsustainable debt to GDP ratio of 128.3%, with debt servicing and public sector wages comprising 56.5% and 25% of the GDP respectively (PIOJ, 2012). The International Monetary Fund (IMF) is currently being engaged for a US $750 million loan, which will be accompanied by macroeconomic changes and structural adjustments within the country; as was the case with structural adjustments introduced in the 1990s by the IMF, a significant contraction of the Public Sector and its welfare function is expected.

Demographics

In 2011, the estimate of population size for Jamaica was approximately 2.7 million persons (Statistical Institute of Jamaica (STATIN), 2011). The sex ratio is approximately 97.9 males to every 100 females, while the racial composition is approximately 92.1% African descent and the religious affiliation is approximately 69.97% Christian (STATIN, 2011).

Life expectancy at birth has increased to 73.1 years on average, up from 38 years in 1900 (PAHO, 2012). This increase is seen in both genders, with females increasing from 60.2 years in 1950, to 77.8 in the year 2000; and males increasing from 56.9 in

1950, to 73.7 in 2000 (PAHO, 2012; Eldemire-Shearer, 2008). Jamaican women therefore on average have a longer life span than males, by 4.1 years (see Table 1.1).

Table 1.1: Life Expectancy in Jamaica, 1900 – 2000

Life Expectancy	2000 (years)	1950 (years)	1900 (years)
Females	77.8	60.2	-
Males	73.7	56.9	-
National average	75.0	?	38

Jamaica has seen a decline in its average annual growth rate since the 1980s, from a rate of 1.40% to a current rate of 0.36%; the growth rate hasn't been this low since 1912 (0.31%) (STATIN, 2011). The slowed growth rate is attributed to greatly reduced fertility rates and high rates of migration. Fertility rates have steadily fallen since 1966, when fertility was at a peak value of 5.82 average births per woman; rates have fallen to 2.33 average births per woman in 2010. Migration rates are high in Jamaica, with a negative net migration rate of 27.42 migrants per 1,000 population in 2009 (PAHO, 2012). The fertility and migration pattern has impacted on the country by: distorting the traditional family structure; restricting the labor market (through brain drain); and increasing remittances (World Bank, 2009).

Family structure

Family structure in Jamaica has shifted dramatically since independence in 1962. Eldemire-Shearer (2012b) points to increased urbanization and the subsequent migration of younger persons for school and employment, as major factors contributing to this change. Additionally, women are increasingly engaged in the formal work sector thus forcing them away from their extended family homes, and resulting in more nuclear

family structures. The role of adult children being caregivers for elderly family members, and serving as the 'old age pension' of their parents is becoming increasingly complicated and unlikely. This relationship also goes in the other direction, as a nuclear family indicates less intergenerational interaction between grandparents and children, who are no longer the major source of child-care for working parents.

Poverty

Poverty rates in Jamaica fell dramatically from 30.5% to 9.9% between 1989 and 2007. However the world financial crisis of 2008 resulted in the contraction of the economy and a spike in poverty rates between for the 2008 - 2010 period. In 2010, the poverty rate is estimated to be 17.6% (PAHO, 2012).

Overall

Having risen by 0.5% per year for the years 1980 - 2011, Jamaica currently has a score of 0.727 on the Human Development Index (HDI). The HDI compares life expectancy, literacy, standards of living, education and quality of life indicators across countries; its rankings range from very high, high, medium and low. Jamaica is steadily been ranked as a 'high' on the HDI.

1.1.1   Organization of healthcare in Jamaica

The health care delivery system in Jamaica currently operates on the premise of ensuring access to care for all citizens, irrespective of socioeconomic status and the ability to pay for services. Amongst developing countries, Jamaica ranks highly in regards to the health status of its population, compared to its GDP, and is seen as providing cost effective care (PIOJ & MFA, 2009).

In fact the book 'Poverty and life expectancy: the Jamaican paradox' is dedicated to deciphering how Jamaica has been able to attain a life expectancy similar to high income countries, when its GDP remains low. This paradox has been hypothesized by many to be due to a focus on Primary Health Care and the wide delivery of these services even in rural areas.

Financing

Jamaica spends between 4.0% and 5.5% of its annual GDP on health (WHO, 2013), though the recommended proportion for the country is between 10-15% (PIOJ & MFA, 2009). Other countries in Latin America and Caribbean spend on average 7.7% of their GDP on health, while developed countries such as Brazil and the USA spend significantly more (17.89% and 9.01% respectively) (PIOJ & MFA, 2009). Due to high debt repayment and the cost of public sector wages, Jamaica provides all services with the remaining 18.5% of the GDP. As such, additional expenditure on health may not be a feasible option. Unfortunately, being classified as a middle-income country means that Jamaica does not qualify for much international or donor funding to help remedy this situation (PIOJ & MFA, 2009).

Organization and Delivery

The government health sector in Jamaica operates as a decentralized system. It is composed of a central level i.e. the Ministry of Health (MOH), four decentralized Regional Health Authorities (RHAs), and thirteen Parish Health Departments. The MOH is charged with driving the overarching vision of the health sector, and ensuring that focus and direction are not lost. It develops policies, norms, standards, protocols and guidelines for the delivery of health care in the country, and mandates the vision and

priorities that will drive the activities of the RHAs. The RHAs in turn 'govern, coordinate and integrate health care services', and through the activities of the Parish Health Departments they implement policies, and ensure the delivery of care to the population (MOH, 2008).

The publicly operated health sector in Jamaica represents a comprehensive model built on primary health care. Services include those of 322 'primary care' focused health centers (Types 1 to 5), 24 hospitals (including 5 specialized facilities) (Chao, 2013; Bailey, 2009; PAHO, 2012). Though 53.8% of total health expenditure occurs in the public sector (which also maintains over 90% of hospital beds in the country), the private sector exists as a large and vibrant counterpart (WHO, 2013; MOH, 2008; Bailey, 2009). The private health sector contributes to health expenditure mostly through out-of-pocket expenses (63.1%), and private insurance reimbursements (32.3%). Non-Government Organizations (NGOs), a sub-set of the private sector, play a relatively smaller role in the delivery of care, with many of these services being very targeted and disease specific (e.g. Jamaica Cancer Society, Diabetes Association, and Jamaica Heart Foundation). In this setting, community groups and churches also play an important role.

Service delivery occurs through a strong public/private mix, with referrals between private and public facilities being common-place (Bailey, 2009). Senior doctors (Consultants) working within the Government sector are usually granted 'dual practice' freedoms, where they can maintain private practice while being employed full-time to the public sector. Additionally, pharmaceutical, diagnostic and ambulatory services are predominantly offered through the private sector; 75% of ambulatory services and 82% of all pharmaceutical purchases are through the private sector (Chao, 2013).

The fluidity of the relationship between the private and public sectors means that for the treatment of one episode of illness, patients may find themselves making multiple contacts with both public and private arms of the health sector (PAHO, 2012).

Primary Health Care in Jamaica

Jamaica's primary health care (PHC) system functions fairly well, with the World Health Organization's World Health Report of 2000, listing Jamaica eighth in the world in terms of health system efficiency (Chao, 2013). PHC services in Jamaica are delivered through 'Health Districts' which are supervised by a District Medical Officer (DMOs). The DMOs within a Parish all in turn report to, and have activities coordinated by their respective Parish Health Department, and by extension the Regional Health Authority within which they fall.

Health districts are arranged based on population demographics and each one serves between 20,000 - 30,000 people (MOH, 2008). Within each health district there is a 'series of inter-locking health centers' which vary by the services they offer and the catchment size they serve. Type one' health centers offer basic family health services such as antenatal care, post natal care, and immunizations, and serves no more than 4,000 persons. 'Type two' health centers and higher offers curative, dental, mental health and pharmacy services to increasingly large populations. 'Type five' health centers offers the afore-mentioned services, in conjunction with specialized and laboratory services; these facilities, however, are mostly located in urban areas (MOH, 2008). See Appendix for the full list of services offered by each health center category.

Access to health services

Since April 2008, user fees have been removed from the publicly funded health sector, in an attempt to increase equal access to services for all Jamaicans. Services include those of primary care, hospital care, laboratories and pharmacies. Upon the removal of user fees, all finance mechanisms to accept cash payment for services were dismantled from public institutions. Due to significantly increased patient loads, increased waiting times and strains to maintain services after the loss of patient revenues, it is unclear as to how and in what populations access was increased or harmed by this policy (PAHO, 2012). Access to health insurance, drug subsidies and pharmacy services will be discussed below.

Access to Health Insurance

Health insurance in Jamaica is available through the government run 'National Insurance-Gold' (NI-Gold), and two privately owned insurance companies: Sagicor and Medecus. Data from the 'Survey of Living Conditions' indicates that 19.8% of the population has accessed any of these forms of health insurance (PIOJ, 2010).

The National Insurance Gold (NI-Gold) health card is the major form of health insurance offered by the Government of Jamaica. It is offered through the Ministry of Labor and Security to pensioners who worked in the formal labor sector, and is funded from the National Insurance Scheme (NIS). The NI-Gold card reflects a comprehensive health plan and provides subsidies for the following:

- Doctor's Visits (JMD$500 ; US$5per visit)

- Diagnostic Services (JMD$4,000; US$40 per year)

- Dental/Optical Services (JMD$3,000;US$30)

- Surgeon's Fee (JMD$30,000; US$300 per procedure)

- Hospital Room & Board (varies)

In addition to the government run NI-Gold scheme, there are two private health insurance companies operational in Jamaica; Sagicor Life Jamaica Ltd (formerly Blue Cross of Jamaica), and Guardian Life Limited (Medecus). Within the population, 18.9% is estimated to have a private source of insurance; amongst those with private insurance, 78% have it because of employment, 19% due to individual purchase, and only 3% due to both employer and individually purchased insurance (Wilks, 2009). The government of Jamaica (GOJ) is a major national employer, and offers Sagicor/Blue Cross health insurance on an employer-employee, cost sharing basis. Upon retirement, the government continues the provision of this 'GOJ insurance' to retired workers, and undertakes full payment of the premiums to the private insurance company.

Nationally, men are significantly more likely to possess private insurance than are women (22.4% versus 15.8%; p<0.01) (Wilks, 2009). Based on health insurance claims, the majority of private costs are due to drugs (45%) and private doctor's visits (20%) (Bailey, 2009).

Access to prescription drug cards

There are two major forms of prescription drug support from the government of Jamaica; these are in the form of a 'JADEP' and a 'NHF card. The Jamaica Drug for the Elderly Program (JADEP) initiated in 1996 by the Government of Jamaica, is a prescription drug program that provides subsidies for 72 prescription drugs. This card is available to all persons 60 years and older, who have any of ten specified chronic

conditions. Upon presentation of this health card to participating pharmacies, drugs are provided free of charge, with the exception of a very small dispensing fee (JMD$40; US$0.40) which is attached to each drug. Under this system, patients must however wait 27 days before requesting a re-fill of any prescribed drug. Currently an agreement exists between the government and private pharmacies allowing them to retain all dispensing fees; public pharmacies are allowed to retain only 20% of such fees (Bailey, 2009). In spite of retaining dispensing fees, some pharmacies have opted out of this program, reportedly due to low financial incentives.

The National Health Fund (NHF), an agency of the Government of Jamaica, was operationalized in 2003 to support and promote the activities of the Ministry of Health. The NHF provides both individual and institutional-level benefits, with individual benefits including a NHF prescription drug card. This card subsidizes the cost of over 1,200 prescription drugs, for 15 chronic conditions. Upon presentation at *any* pharmacy, the card is projected to save subscribers between 47%-75% of costs (Chao, 2013; NHF, 2012). Additional supplies and procedures are subsidized for Diabetics and Asthmatics, with Diabetics having access to subsidized blood/urine sugar test strips, lancet syringes/needles, four subsidized HbA1C tests per year, and a free glucometer and/or pen-fill every two years. Asthmatics on the other hand are offered subsidies for the purchase of asthmatic spacers and masks. (NHF, 2010)

The NHF card is available to all Jamaican residents regardless of age or income status, with the major requirements for this card being verification of chronic illness, and possession of a National Tax Payer Registration Number. Under this scheme, patients are allowed to purchase up to a three month supply of medications at any one time. Under

special circumstances e.g. physical or financial distress in accessing pharmacy services, the NHF has the discretion to allow disbursal of drugs in excess of this limit. All pharmacies participate in this drug insurance scheme.

To support the funding of this health card, the NHF primarily harnesses money from a 'sin tax' on tobacco, with additional funds coming from the National Insurance Scheme and a special consumption tax on alcohol and petroleum. Both the JADEP and NHF drug cards may be used in combination with each other, and/or in combination with health insurance cards, thus providing full benefits to recipients.

Access to Pharmacy services

There are three types of pharmacies operational in Jamaica; public pharmacies, Drug Servs ('extended' public pharmacies), and private pharmacies (table 1.2). Pharmacy distribution follows a similar pattern as health facilities, being primarily distributed around urban centers. In fact, almost 50% of all pharmacies are located in the two major urban areas, Kingston (38%), and Montego-Bay (10%) (Bailey, 2009). All pharmacies are regulated by the Pharmacy Council of Jamaica and abide by the 'Pharmacy Act' of 1966 (Pharmacy Council, n.d.).

As indicated in Table 1.2, 'public pharmacies' are those found in government operated health centers and hospitals; these pharmacies accept prescriptions only from public patients and provide medications completely free of charge. The drugs and medical sundries provided in public facilities are carefully selected and procured by the government, to ensure the use of safe supplies in public facilities. Drugs procured by the government are categorized as being Vital, Essential or Necessary, and as such are grouped into a 'VEN list'. The VEN list represents an exclusive list of drugs outside of

which public facilities will not be supplied. Public patients prescribed drugs that are not on this list, must therefore source the drug at a Drug Serv or Private pharmacy. Though a major quality control step forward, the VEN list is not without criticisms for containing insufficient drugs, and for the bureaucratic red tape needed to change drugs on this list.

Table 1.2: Comparison of Public, Private and Drug Serv Pharmacies

| | Drugs carried | Payment required for: | | Health Insurance |
		VEN items	Non-VEN items	
Public Rx				
Public patients only	VEN list only	No	n/a	Gov. insurance only
Drug Serv				
Public patients	Varied	No	Yes	All accepted
Private patients	Varied	Yes	Yes	All accepted
Private Rx				
Public patients	Varied	Yes	Yes	All accepted (though some
Private patients	Varied	Yes	Yes	may not accept JADEP)

'Drug Serv' represents an 'extended'-public pharmacy. Drug Serv was as initially a result of a public-private partnership between the government of Jamaica and Health Corporation Limited (HCL) however, the NHF has absorbed the HCL and now has full responsibility for these pharmacies. This makes Drug Serv fully owned and operated by the Government of Jamaica. Unlike traditional public pharmacies however, Drug Serv provides access to- and accepts payment for drugs that are not on the VEN list. Both private and public sector patients may utilize these services, however public patients do not pay for drugs on the VEN list, all other purchases must be paid for in these pharmacies. Drug Serv medications tend to be sold at a lower than market value due to the economies of scale provided through the NHF. Waiting time and drug availability tend to be significant concerns in both the public and Drug Serv pharmacies.

Private pharmacies are owned and operated by private entrepreneurs, and represents over 75% of all pharmacies island-wide. Generally they accept all forms of health insurance and drug cards (some do not accept JADEP), and offer a wide range of drugs and sundries.

1.2 Demographic Shift

The demographic shift refers to reduced fertility and increased longevity within a population; this results in both 'population level ageing' where there is a steadily increasing median age of the population, and 'individual level ageing' where individuals are achieving increases in length of life (Stewart, 2009). The United Nations (UN) general assembly describes the demographic shift as "an unparalleled, but urgent, policy and program challenge to governments, non-governmental organizations and private groups", further stating that because of its rapid progression in developing countries "the international community…urge[s] governments to consider policies and programs for older persons as part of overall development strategies" (United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), 2000).

1.2.1 Population Ageing

Population ageing is "the process by which older individuals become a proportionally larger share of the total population" (UN, 2002a, p 1). It also reflects a gradually increasing median population age; the 50-year span between 1950 and 2000 saw the median age of the world population increasing from 24 years to 27 years. This trend is expected to continue over the next 50 years, with the year 2050 having a median age of approximately 36 years (UN, 2002a).

People over 60 years are the fastest growing age group worldwide, with the 80 years and older group being the fastest growing sub-cohort (WHO, 2002). Between 1950 and 2000 the elderly population tripled in size, and projections for the 2000 to 2050 period expects the number to once again triple (UN, 2002a). In 2050 it is estimated that there will be two billion persons over age 60 worldwide, with approximately 80% of these persons living in developing countries (WHO, 2002). This projection for the year 2050 represents a ten-fold increase over the 200 million older persons documented in 1950 (see Figure 1.1).
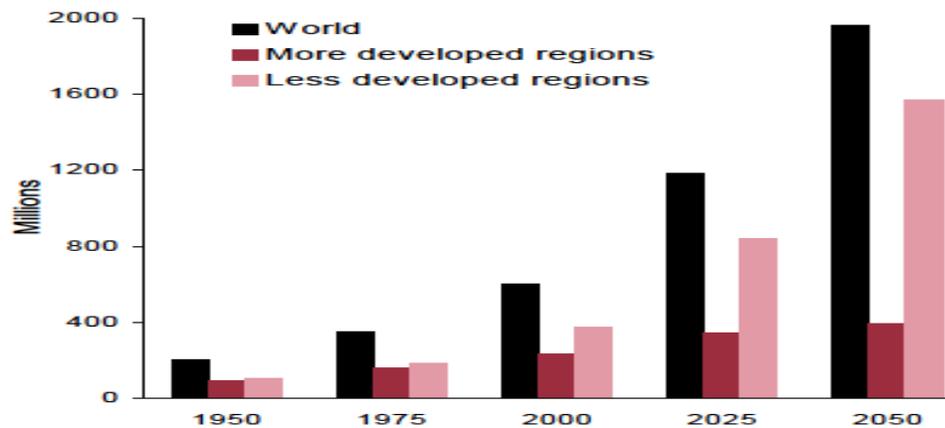
Source: Department of Economic and Social Affairs (DESA), United Nation, 2002

Figure 1.1: Estimation of the Prevalence of Elderly Persons Worldwide, 1950-2050

As populations age, the triangular shape of the demographic pyramid (e.g. 2002) will be replaced with a more cylindrical structure (e.g. 2025) (WHO, 2002). This change in the shape of the demographic pyramid represents a shift towards having a similar number of persons in all age groups. This implies having progressively more persons in older age groups, as the number of children decrease (see Figure 1.2). The 'Ageing Index', which is a ratio of persons over age 60 compared to persons '15 years and younger' is expected to get progressively higher based on these shifts in the population.

By the year 2050 it is expected that the child population would have fallen so significantly while the ageing population grew, that for the first time in history there will be a 1:1 ratio of these populations (both being 21% of the population) (UN, 2002a). This implies the aging cohort will have less young persons paying into the tax base that provides them with social security services, and fewer people to provide them with physical, social and emotional support.
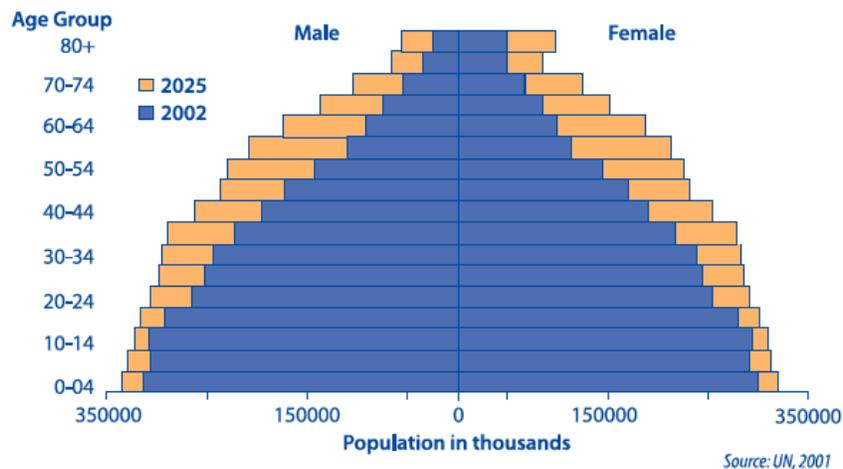
Source: UN, 2001; World Health Organization, 2002

Figure 1.2: Expected Changes in the Global Population Pyramid, 2002 – 2025

Heralded as 'one of the most distinctive events of the twentieth century… [that is expected to] remain important throughout the twenty-first century' (UN, 2002, p 1), this phenomenon is poised to play an important role in the development of public policies. The world's demography is not expected to revert to a younger, triangular population structure, and all countries are expected to at some point face this event at varying magnitudes and intensities. (UN, 2002)

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The 'population ageing' phenomenon was first identified in developed countries as early as the 18th century; here the elderly population gradually grew as economic development in the country progressed. This allowed for developed counties to slowly adjust over many generations, and to the evolving changes in its population structure. This provided developed countries with time and resources to slowly implement relevant policies, services and institutions to deal with the evolving problem (WHO, 2002) and also offered them time to 'grow affluent before they became old' (Kalache & Keller, 2000). Developing countries on the other hand started experiencing population ageing at a later time and unfortunately at a much faster rate, but with less resources, and while tackling the HIV/AIDS pandemic (UN, 2002). Developing countries endured a dramatic population shift that was compressed into two or three decades, rather than over the course of generations as in developed countries. Consequently, relevant policies to mitigate the financial and social implications of ageing were many times not addressed in the developing world. Developing countries were unfortunately left 'getting old before a substantial increase in wealth occur[ed]' (WHO, 2002, p 34; Kalache & Keller, 2000).

The dramatic ageing phenomenon in developing countries is associated with significant changes in: i) family size; ii) structures and roles; iii) labor patterns; iv) migration patterns; and v) urbanization (WHO, 2002). Through urbanization and fertility reduction, family size has gradually gotten smaller and has morphed into a more nuclear structure as women migrate to the urban areas in search of better opportunities. As this occurs, extended families shrink and women are motivated to keep their immediate family size smaller than previous generations. This results in a dearth of persons remaining in rural areas to care for and support the elderly as they age (WHO, 2002).

The Caribbean is one such area that experienced a rapid shift in population structure over a fairly short period of time, and dramatic changes in the family structure paradigm; currently it represents the region with the most rapidly growing older population. Eldemire-Shearer (2008) notes that this poses a significant issue for the region, as even though the absolute numbers may not be as large as those of other developing countries such as India and China, it does pose significant problems due to the diminished economies of scales found in small islands.

Changes in mortality and fertility rates

Population ageing involves decreases in fertility rates and increases in life expectancy (i.e. lowered mortality rates) within the population (see Figure 1.3). This results in a reshaped age structure due to "shifting relative weight from younger to older populations" (UN, 2002). Worldwide successes in decreasing fertility rates and increasing longevity will promote the continued "greying of the world's population" (WHO, 2002; p 6).
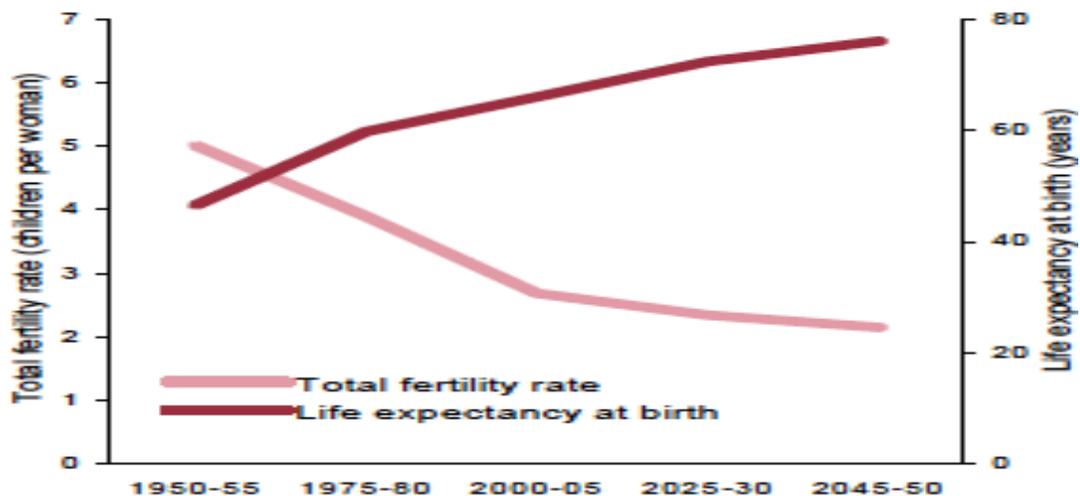
Source: Department of Economic and Social Affairs (DESA), United Nation, 2002

Figure 1.3: Total Fertility and Life Expectancy at Birth Worldwide (1950- 2050)

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'Fertility decline' is the primary driver of population ageing, with developing countries having a later but more rapid decline in fertility than developed countries. Significant reductions in fertility occurred in developing countries primarily between 1970 and 2000; with the total fertility rate falling from 6.2 children per woman in 1950-1955, to 2.9 children per woman in 2000-2005 (UN, 2002).

Figure 1.4 illustrates this phenomenon by comparing the trend in fertility rates between 1960 and 2010 for Jamaica (developing) and the United States of America (developed). It is estimated that between 1975 and 2025, 98 additional countries will have fertility rates that have fallen to/below the replacement level of 2.1 children per woman (from 22 countries to 120 countries) (WHO, 2002).
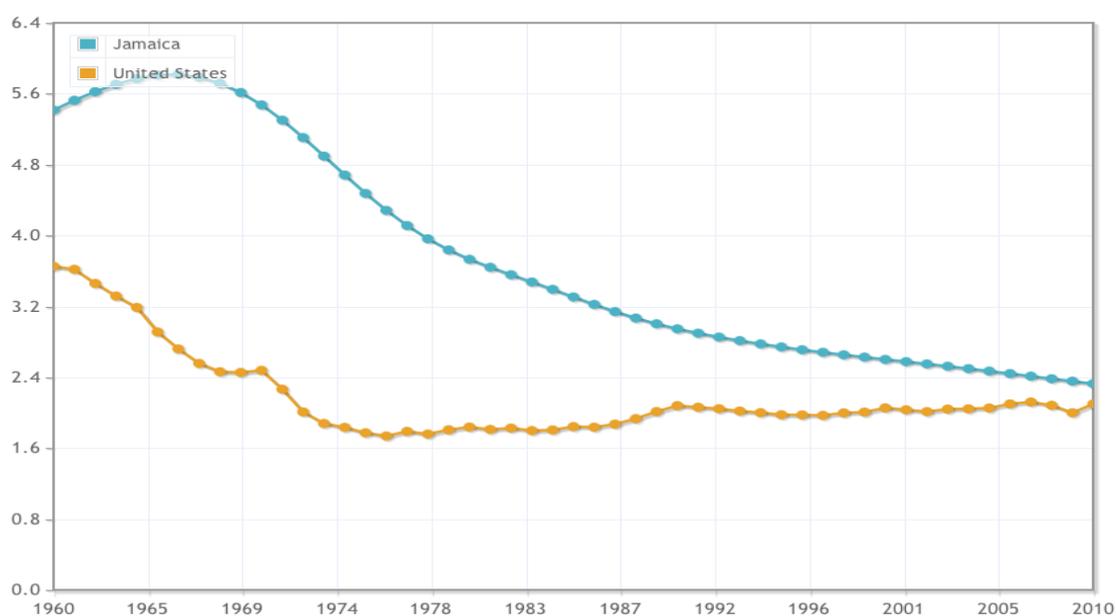
Source: http://www.indexmundi.com/facts/jamaica/fertility-rate

Figure 1.4: Changing Fertility Rates Over Time for Jamaica and the USA, 1960-2010

'Mortality decline' the other major component of the demographic shift, progressively increases in importance in determining the age structure of a population. As fertility rates stabilize over time, reduction in mortality rates especially amongst the elderly population tends to influence the demographic shift more strongly.

Factors affecting the ageing of the population include:

1) Increased life expectancy levels (intertwined with reduced mortality rates)

2) Decline in infant mortality rates over past few decades

3) Reduction of infectious diseases, allowing progression to adulthood (e.g. diarrheal, respiratory and vector borne diseases)

4) Improved access and delivery of health care; as economic progression ensues and effective drugs and technologies become more mainstream

5) Improved health promotion and educational material for the general population

6) Improved environmental sanitation including water quality, waste disposal and general environmental hygiene.

(Eldemire–Shearer, 2008; Stewart, 2009)

1.2.2 Individual ageing

Individual ageing as explained by Gorman et al, is not only "a biological reality" but is "also subject to the constructions by which each society makes sense of old age" (Gorman, 1999; WHO, n.d.). This means that ageing is not only a reflection of objective measures such as date of birth/age, but also reflects cultural and social norms, and perceptions within societies. As such 'age' as a concept may not be as straightforward as may be expected. In fact, three major classifications of age frequent literature on the 'elderly'; these classifications emerged from an anthropological study done in several

developing countries in the 1970s (Glascock, 1980; WHO, n.d.). These are: i) *Chronological Age,* which is the most intuitive expression of age that currently exists, and which measures the number of years since one's birth. ii) *Social Age* reflects changes in social responsibilities with one's communities i.e. changes in employment and work status, and changes in family responsibilities. The third and final mode of measuring age is that of iii) *functional age*, and this includes changes in physical ability/vigor, appearance and independence in daily and community activities.

There is no consensus worldwide on the age requirement to be termed 'elderly'; countries and regions classify their ageing population based on context specific political and economic developmental factors. For example, in 'developed' countries with comparatively greater financial resources and highly organized social welfare and retirement policies, the age of retirement (usually a chronological age of 60 or 65) usually defines the start of old age and the subsequent classification of being 'elderly'. In developing countries on the other hand, old age is defined not by chronological age but as starting at the point when "active contribution is no longer possible"(Gorman, 1999), i.e. functional and social age play a greater part in defining age in these contexts. Once functional ability diminishes to the point that routine participation in the workforce is difficult, then ageing is seen to have begun. Generally, this occurs in developing countries between the ages of 45 and 55 years for women and between the ages of 55 and 75 years for men (Thane, 1978). In Jamaica, the national age of retirement is currently 60 years for both men and women, and is widely embedded into the policies and the cultural practices of the country. As in developed countries, the age cut-off for being a senior citizen or being considered 'elderly' is in line with the retirement age.

Irrespective of the age requirement for being considered 'elderly', it is important to recognize that this is not a homogeneous group and must be not be treated as such. The elderly may be further categorized by age, gender and functional status. The subcategories '*young old*' (65-74yrs), '*middle old*' (75-84yrs), and '*old old*' (85yrs and older) are the commonly used age categories for the elderly. This classification spans across 45 years of life (from 65 to 110 years) and includes two to three different generations.

Gender differences are also highly prevalent and stem from the feminization of the elderly population. This requires a different gender distribution of services for this population as compared to the general public. The feminization of the elderly is due to the increasing age of the population, in conjunction with the longer life span of women; on average Jamaican women live almost 4 years longer than men. At birth the ratio of men to women is roughly 1:1, but the over 60 age-group has a ratio of 8.5:10, with the over 80 age group showing the highest gender imbalance (7:10 ratio) (STATIN, 2001).

These sub-categories must be considered in the development of policies to address the elderly; a blanket policy that does not specify by subcategories of age, gender or functionality will be too general to meet the needs of this complex, multi-generational group. This approach is supported by the UN, which highlights the need for policy makers to be aware of the "dramatic variations in health status, participation and levels of independence among older people of the same age" (WHO, 2002; p 3).

1.2.3 Ageing in Latin America and the Caribbean

Population ageing is underway in Latin America and the Caribbean (LAC). Life expectancy has increased by on average 21.6 years between 1950 and 2010, and is currently approximately 73.4 years. This life expectancy rate is higher than in other developing regions (by approximately 8 years) and lower than that of Europe by only 1.2 years (DESA UN, 2002). Additionally, fertility rates have decreased rapidly between 1950 and 2010, falling from 5.9 children per woman on average, to 2.4 children. This indicates a shrinking child population and increasing middle age and elderly population in LAC.

Ageing in the region is progressing rapidly, especially when compared to North American and European countries. Currently, persons over 60 years of age represent approximately 8% of the population in this region. Compared to current rates, LAC will attain a 'substantial' proportion of elderly persons (i.e. 15%) in about 40% of the time it took the USA to achieve this rate, and 20%-40% of the time it took to occur in Europe (Palloni, Pinto & Pelaez, 2002). Projections for population size in LAC by 2030 indicate the elderly population will increase by 150% -250% over the numbers in 2000, and by 2059 the elderly will represent an estimated 23.6% of the total population (Palloni & McEniry, 2006; Latin America and the Caribbean Demographic Center (CELADE), & Economic Commission for Latin America and the Caribbean (ECLAC), 2007).

LAC has a unique blend of properties that makes its ageing process distinct and less predictable than that of developed countries (Palloni & McEniry, 2006). Such properties include: i) the rapid rate of ageing; ii) the vast disparity between the speed of ageing and improvements in standards of living; iii) institutional fragility/volatility due to

political and economic forces; and iv) the poorly defined health status of the elderly (Palloni & McEniry, 2006). These factors limit the ability for LAC countries to widely adopt international best practices and policies on ageing.

1.2.4 Ageing in Jamaica

In the LAC region, Jamaica is classified as being in a stage of 'full demographic transition' (CELADE/ECLAC, 2007). This demographic transition is evidenced by projections that the median population age will increase from 17 years in 1970, and 27 years in 2011, to 39.0 years by the year 2050 (Eldemire Shearer, 2008; STATIN, 2011). This shift in population structure is supported by the falling fertility rate, which fell from almost 6 children in the mid-1960s to almost 2 children in 2010. The change in demographic structure is illustrated in figure 1.5, which shows the demographic pyramid changing from a triangular shape into a more cylindrical one.
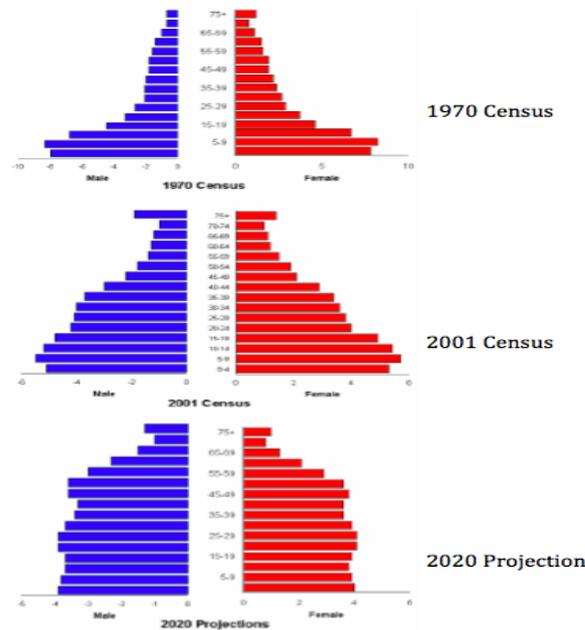
Source: The Economic and Social Survey, 2002

Figure 1.5: Changing Demographic Profile in Jamaica, 1970 - 2020.

Age distribution

The elderly population (i.e. those over 60 years) is currently increasing in both absolute and proportional terms (Eldemire-Shearer, 2008), with 2011 data from the Planning Institute of Jamaica (PIOJ) indicating that this group currently comprises of approximately 299,500 persons (11% of population). Worldwide the elderly population is increasing at a faster rate than the general population and this is expected to continue past the year 2050. In Jamaica, in the early 1980s the elderly population increased at 3% annually while the general population increased at a rate of 1.2% (Eldemire-Shearer, 2008). The Jamaican rate of increase of the elderly population is actually higher than the 2.5% average rate for developing countries, and the .09% rate of developed nations (UN, 2002a). The elderly is consequently the fastest growing age group of the Jamaican population, with the fastest growing subpopulation being the 80 and older age group (see Table 1.3) (Eldemire-Shearer, 2008; UN, 2002).

Table 1.3: Population Growth Rates in Jamaica, 1975-2050

Age group	1975-1980 (%)	2000-2005 (%)	2025-2030 (%)	2045-2050 (%)
Total	1.2	.9	.8	.4
60+	3.0	1.2	3.2	1.9
80+	12.4	2.0	3.0	3.1

Source: UN, 2002

The trend in ageing is expected to continue indefinitely, with the projected number of elderly in Jamaica expected to increase from approximately 300,000 to 450,000 by 2030 (PIOJ, n.d.). Twenty four percent (24%) of the national population is projected to be 60 years and older in 2050; this represents an increase of 160% compared to 2000 figures (UN, 2002) (see Figure 1.6).
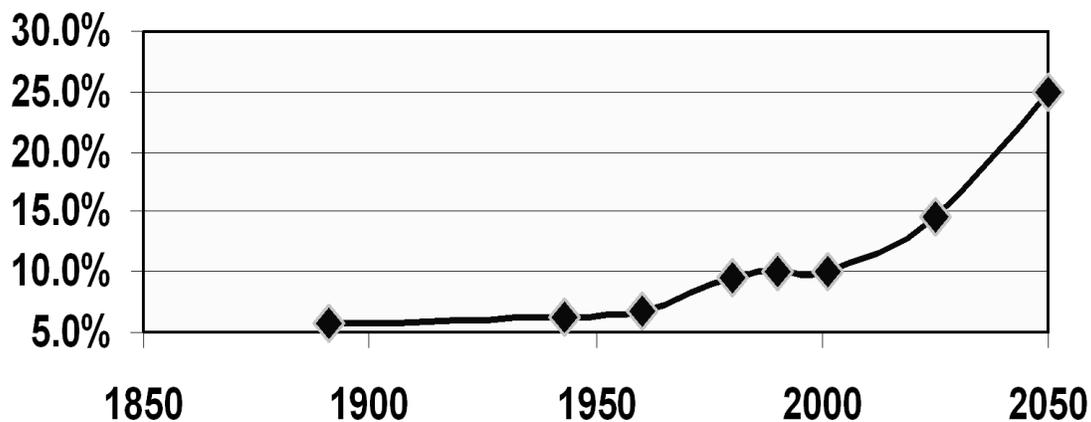
Source: Eldemire-Shearer, 1998

Figure 1.6: Projected Estimates of the Proportion of Elderly in the General Population

Gender ratio

At birth, the ratio of men to women is roughly 1:1, however Jamaican females live longer than their male counterparts, and as the population ages the gender ratio also begins to change. This results in the majority of the elderly cohort being females/widows; this is termed the feminization of the elderly. The over 60 age group in Jamaica has a gender ratio of 8.5:10, with the over 80 age group showing the highest gender imbalance (7:10 ratio) (STATIN, 2001).

Labor force participation

Labor force participation in the over 65 years age group is 34.3% in Jamaica (22.3% of females, and 49.3% of males); this rate is higher than the Caribbean average of 17.6% (World Bank, 2005). Most persons are employed in informal sectors and are unaware/apathetic towards retirement planning and pension plans.

Females in the Caribbean are generally less educated, have less work experience, have less access to pension schemes, and less private income sources (Cloose, 2010). These factors contribute to the feminization of poverty amongst the elderly in the Caribbean.

1.3 Epidemiological Shift

The epidemiological transition represents a shift from communicable diseases to non-communicable diseases (NCDs) being responsible for the majority of morbidity and mortality in a population. This shift towards a greater burden of chronic diseases within a population is generally associated with progress towards economic development, and is many times experienced as countries move from 'developing' to 'developed' country status.

Economic development encourages this shift through improved environmental management, which decreases the incidence of communicable diseases (e.g. water quality, sewage disposal, vector control), and through changes in lifestyle (e.g. calorie rich diets; decreased physical activity).

NCDs such as heart disease, diabetes, and cancer represent most of the global burden for mortality and morbidity worldwide. Comparing 2008 estimates with projections for 2030, the morbidity burden from NCDs is expected to increase in these

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countries; in low-income countries the burden is expected to increase from 37% to 50%, while in middle-income countries the increase is expected to be from 65% to 75% (National Institute on Ageing, 2012).

NCDs are responsible for 63% of all deaths worldwide, with 80% occurring in low- and middle-income countries (WHO, 2011). The National Institute on Ageing (2012) projects that in low-income countries the prevalence of chronic diseases will increase on average from 37% to 50% between 2008 and 2030; while middle-income countries there will be an increase from 65% to 75% during the same period. Of the approximately 36 million NCD deaths that occur annually, an estimated 72% (26 million) occur in persons 60 years an older (WHO, 2011). This is not unexpected as the prevalence of NCDs progressively increases as individuals and populations get older (see Figure 1.7); this trend holds true across all regions of the world (WHO, 2002). Figure 1.7 shows the proportional burden of chronic diseases in low- and middle-income countries, and highlights the increasing burden with age.
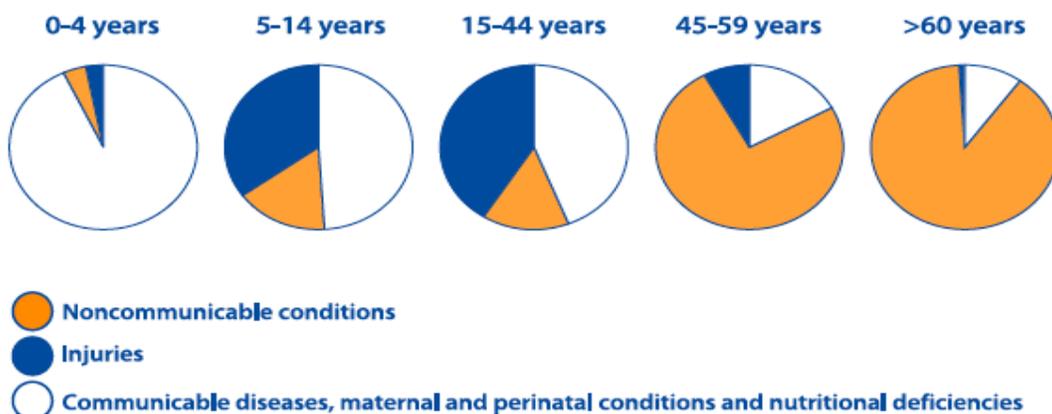
Source: WHO, 2002

Figure 1.7: Leading Causes of Death in Low- And Middle- Income Countries by Age

1.3.1 Chronic Disease Epidemiology of Jamaica

The epidemiological transition is underway in Jamaica, as disease burden has gradually shifted from infectious diseases to long-term chronic illnesses. Infectious disease mortality has steadily decreased over the past few decades with mortality falling from 18.9% in 1970, to 4% in 1999 (Riley, 2005).

In 1945, four of the five leading causes of death were of infectious origin, however by 2004 the top five causes of death were all chronic diseases such as stroke, diabetes heart disease (see Table 1.4) (Ferguson, 2011).

Table 1.4: Leading Causes of Deaths in Jamaica; 1945 - 2004

1945*	1982*	1996 **	2004 ***
Tuberculosis	Cerebrovascular Disease	Cerebrovascular Disease	Cerebrovascular Disease
Heart Disease	Heart Disease	Diabetes Mellitus	Diabetes Mellitus
Nephritis	Malignant Neoplasm	Ischaemic Heart Disease	Ischemic Heart Disease
Syphilis	Hypertension	Hypertensive Diseases	Hypertensive Diseases
Pneumonia & Influenza	Diabetes Mellitus	Homicide/Assault	Other Heart Disease

Source: Ferguson et al., 2011

WHO (2011) statistics for the 2010 period indicate that 68% of the total mortality for all age groups in Jamaica is due to chronic diseases; cardiovascular disease represents 32% of total mortality and is the largest killer in the country (see Figure 1.8). Data from the Jamaican Healthy Lifestyle Survey (2008) indicates that between 2000 and 2008 the prevalence of chronic diseases and lifestyle risk factors have been trending upwards e.g. diabetes prevalence increased from 7.2% to 7.9%, while hypertension increased from 20% to 25%.

In terms of subpopulations, men are estimated to have a higher chronic disease mortality burden than women (20.1% versus 17.5%), and the over 60 population is estimated to have greater morbidity than younger populations (WHO, 2011; Wilks et al, 2009).
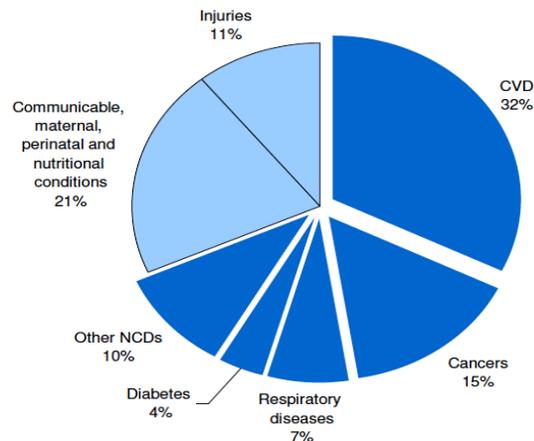
Source: WHO, 2011

Figure 1.8: Proportional Mortality for All Age Groups in Jamaica

1.4. Impact of Chronic Diseases

NCDs slowly progress over many years and are incurable lifetime conditions that may be effectively managed through drugs and behavior change. The causal process for developing these diseases is typically prolonged and complex with no one discernible factor initiating illness; many modest factors tend to contribute to the development of such diseases (Remington, 2010). The impact of NCDs are: i) disease burden; ii) functional disability; and iii) associated costs, and are discussed in the sections below.

Figure 1.9 illustrates the increasing burden of NCDs on older populations as compared to younger ones. It shows that risks for developing NCDs accumulate throughout one's life time (fetus, infancy, adolescence and adulthood), with the greatest amount of risk being present in late adulthood.
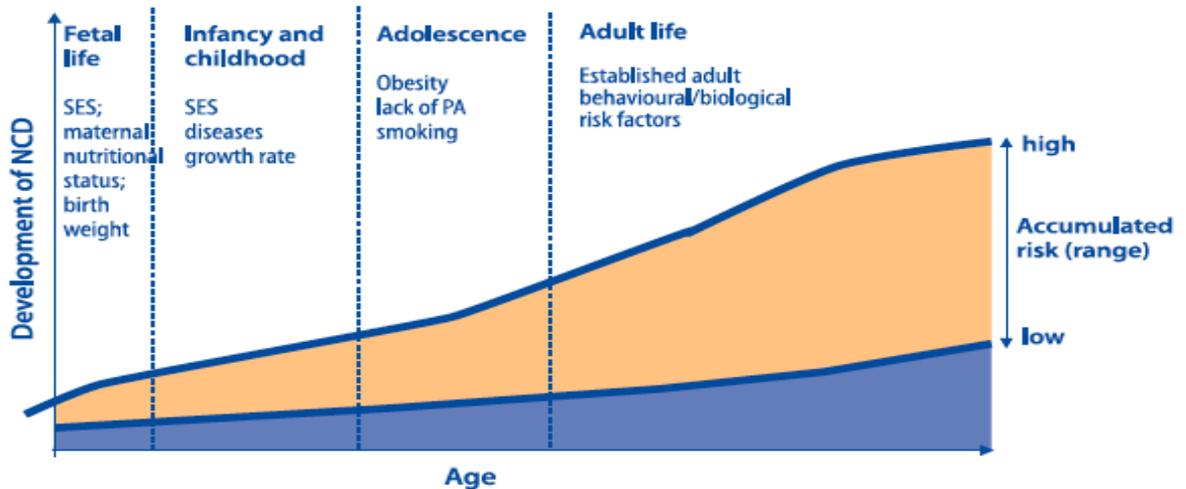
Source: Aboderin, 2002; WHO, 2002

Figure 1.9: Life Course Approach to Developing Chronic Diseases

Though the mortality burden from NCDs is high, it is not the only major implication of these diseases. Disability due to NCDs often affects 'quality of life' (including physical, social, economic and spiritual factors) long before it affects longevity (Remington, 2010). Boult (1996) illustrates the increase in functional disability due to chronic diseases in the years to come, by projecting a 300% increase in disability in 2049, over 1996 figures.

Functional capacity refers to the physical (ventilator capacity, cardio-vascular health, muscle strength), visual and cognitive ability to undertake work or lifestyle related activities (WHO, 2002). Functional capacity generally increases as persons move from infancy through adolescence to adulthood; shortly after peaking in early adulthood however, these capacities begin to wane and continue to decrease with increasing age (see Figure 1.10).

If the decrease in functional ability becomes significant enough to impede basic activities, then individuals may be classified as falling below the disability threshold, and may be considered as 'functionally disabled'. Significant decreases in functional ability may result in premature disability for individuals.
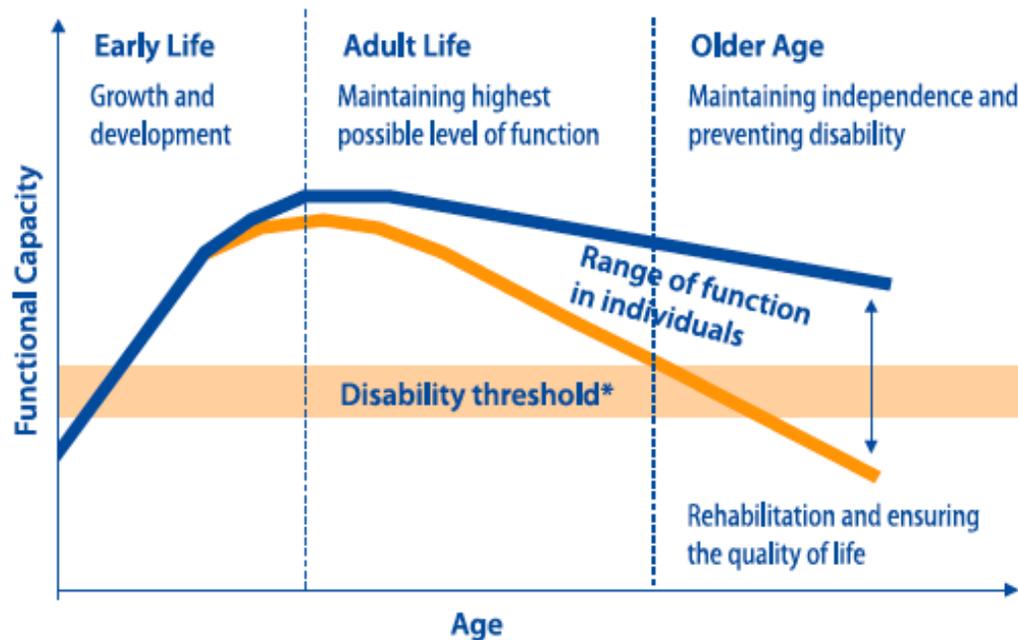
Source: Kalache & Kickbusch, 1997; WHO, 2002

Figure 1.10: Range of Functional Capacity over One's Life Course

Functional disabilities (as determined by falling below the disability threshold), result in the decreased ability for persons to adequately undertake 'activities of daily living' (ADLs). These include the ability to bathe, dress, and feed one's self, and to manage one's finances without the assistance of others. Inability to undertake ADLs, results in reduced levels of independence and self-sufficiency in affected persons (Katz, 1970). These disabilities may be classified as: i) *immediate*, stemming from acute events such as hip fractures, stroke and amputations; or ii) *progressive*, occurring over an

extended period of time such as reduced mobility and nimbleness of limbs. Along with loss of independence, and the economic / social burden placed on families, functional disability is also a risk factor for depression in the elderly. These poor outcomes make it critical for functional disability to be slowed or reversed in the chronically ill and the elderly populations.

In addition to reductions in functional capacities and quality of life, NCDs are also costly for individuals, their families and for governments (WHO, 2010). NCDs have been documented to result in the bankruptcy of many individuals, due to the extremely high costs associated with treating these diseases and their complications (WHO, 2011; WHO, 2002). These individuals also face higher risk of losing family assets and lost opportunities. NCDs also present significant indirect costs at the population level, these include: due to lost productivity; lost tax revenues; lowered returns on capital investments; and non-reimbursement of individual costs (Thrall, 2005; Nikolic, 2011) (see Figure 1.11). NCDs are consequently expensive for governments, health providers and for individuals, with economic evaluations indicating that a 10% increase in these diseases may result in a 0.5% lower rate of annual economic growth (WHO, 2010). These costs translate into lower productivity and competiveness of the country in international markets (Nikolic, 2011).

Exhibit 4. NCDs have a significant impact on economies, health systems and households

Key drivers

Economies
- Reduced labor supply
- Reduced labor outputs (e.g., cost of absenteeism)
- Lower tax revenues
- Lower returns on human capital investments
- Increased public health and social welfare expenditures
- Cost to employers (e.g., productivity, health)

Health systems
- Increased consumption of NCD-related healthcare
- High medical treatment costs (per episode)
- Demand for more effective treatments (e.g., cost of technology and innovation)
- Health system adaptation needs and costs (e.g., organization, service delivery, financing)

Households and individuals
- Reduced well-being
- Increased disabilities and premature deaths
- Household income decrease, loss, or impoverishment
- Higher health expenditures, including catastrophic spending
- Savings and assets loss
- Reduced opportunities

Key impact areas

Country productivity and competitiveness | Fiscal pressures | Health outcomes | Poverty, inequity, and opportunity loss

Source: World Bank analysis by the authors

Source: Nikolic, 2011

Figure 1.11: Impact of NCDs on the Economy, Health System and Households

Diabetes alone has cost the Latin America and Caribbean (LAC) region an estimated $65 billion in 2000, with 83% ($54 billion) being due to indirect costs. Chronic Respiratory Disease on the other hand cost $24 billion 20 years ago (1993) (Barcelo, 2003). When considering the combined cost of major NCDS, the cost for heart disease, stroke and diabetes in four Latin American countries (Argentina, Brazil, Colombia and Mexico) was projected to be $13.54 billion over a nine-year period (2006-2015) (Abegunde, 2007).

1.4.1 Modifiable risk factors for chronic diseases

Prevention of NCDs and of functional disabilities is an important aspect of protecting the health of the world's population. The nature of NCDs allows for a lengthy asymptomatic phase that may start as early as in childhood or adolescence; this

characteristic implies that these diseases may be susceptible to early screening interventions and lifestyle changes aimed at preventing and identifying early departures in health (WHO, 2002). NCDs are therefore quite amenable to primary and secondary prevention methods.

Overt expression of these NCDs are shaped by both 'non-modifiable' risk factors that do not allow for interventions to reduce their impact (e.g. age and genetics); and 'modifiable' risk factors that that are amenable to change. Modifiable risk factors for the development on NCDs and their complications include: i) low physical activity, ii) poor quality nutrition, iii) tobacco and alcohol consumption and iv) obesity. A reduction/cessation of these activities may serve to prevent the development of NCDs in the first place, and will also serve to better control and manage the disease (Shi, 2010). Health education and health promotion activities are a major source of addressing these factors, along with increasing self-efficacy through practical, hands on learning sessions. These may include teaching patients 'actionable' ways of controlling tobacco cravings, teaching simple exercise routines, and helping patients learn how to shop for fresh fruits and vegetables and how to prepare them in a healthy manner. Access to- and utilization of routine primary health care services is also considered a major modifiable facilitator of good health outcomes (Shi, 2010), and will be discussed extensively in latter sections.

In terms of the complications of chronic disease (and old age), the speed of functional decline may be slowed or reversed by improving the lifestyle factors mentioned above, and by modifying key environmental factors (WHO, 2002). These changes in lifestyle and environmental exposures serve to reduce the disability threshold seen previously in figure 1.10, and may subsequently reduce the burden of disability within a population (Kalache & Kickbursch, 1997).

Functional decline and loss of mobility is significantly associated with smoking, high body mass index, and low physical activity levels in both genders (Lacroix, 1992). Lifestyle changes that reduce these risk factors are consequently important in reducing/reversing declines in functionality. Significant changes in one of these factors may have a great impact e.g. smoking cessation has been associated with a slowed decline in pulmonary function. Force Expiratory Volume in .75 seconds ($FEV_{0.75}$) declines at a slower rate for persons who have stopped smoking for any length of time versus current smokers (Pelkonen, 2001). Cessation is also associated with decreases in lung cancer and cardiovascular disease mortality, with mortality rates decreasing as a function of length of cessation (Lim, 2011). Moderate changes in a combination of lifestyle factors also provide an alternative for reducing decline in physical function.

Changes in the environment include the built, physical and social aspects of the environment. Built and physical environment changes include: precautions to reduce the risk of falls and slips in the home and community; providing stairs or support rails in communal areas; ensuring continuity of sidewalks and prompt repair of pot holes; and having wide, clearly illuminated stairwells. Improvements in the social environment on the other hand include: encouraging adherence to doctor's visits; providing drug/therapy

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assistance programs to reduce the out of pocket costs for patients; increasing access to all members of the primary care team, such as nutritionists, and physiotherapists to help maintain/ improve flexibility and mobility. Social environment may also include provision of acceptable and accessible forms of public transport and incorporating lifts, ramps, and adaptations in the home and local community (WHO, 2000a).

Lifestyle and environmental factors may serve as health promoting agents that lowers the disability threshold, thus keeping individuals healthier, functional, and independent for longer periods of time irrespective of age or gender. These factors must therefore be included in policy interventions if health outcomes are to be maintained/improved amongst the chronically ill and the elderly.

If modifiable risk factors are addressed through policy and individual interventions then the risk of illness and disability in the population should be greatly reduced/prevented. The WHO estimates that if the major modifiable risk factors were prevented then 75% of heart disease, stroke and type 2 diabetes, and 40% of all cancers, would be prevented (WHO, 2011). International frameworks such as the WHO's "Active Ageing Framework", supports the prevention of NCDs through lifestyle changes throughout one's life course (WHO, 2002).

Chronic diseases pose financial, human development, economic and political barriers, and must be addressed aggressively if national development is to proceed. Modifiable risk factors provide a major opportunity for interventions to prevent development of these diseases and disabilities.

The WHO (2002; p 13), encourages aggressive policy development and action on this front as it states that "Failing to prevent or manage the growth of NCDs appropriately will result in enormous human and social costs that will absorb a disproportionate amount of resources, which could have been used to address the health problems of other…groups."

1.5 Jamaica's Health Policy Response to Ageing

The Jamaican government has been a keen proponent of policies to address the needs of the elderly. Activities have been initiated to address the needs of this cohort, by: forming a 'National Advisory Board' for policy and program development for the elderly as early as 1976; ii) training staff in the 1980s to implement national interventions "to look after the welfare of seniors"; and iii) adopting in 1997 a National Policy for Senior Citizens which reflects the United Nations International Principles for Older Persons (Eldemire-Shearer, 1998).

The 1997 National Policy for Senior Citizens consisted of nine key areas of focus, of which Health was one. Much progress was achieved under this policy especially under the areas of 'public education and media', 'national infrastructure', and 'social welfare'. Though the area of 'health' was not as widely implemented as other areas, the government did make major strides in improving access to health in the elderly. The government has introduced drug assistance schemes and a national coordinating body (The National Health Fund) to aid in the management of chronic diseases. One major drug assistance scheme offered through the Ministry of Health is the 'Jamaica Drug for the Elderly Program' (JADEP).

The Ministry of Labor and Social Security provides a health insurance scheme for the elderly (National Insurance Gold). This insurance is automatically provided to all persons upon retiring (once they have worked within the formal labor force and have contributed to the pension fund). Due to the eligibility criteria and the recent enactment of the law the NI-Gold program currently covers only 33% of the elderly cohort.

The removal of user fees from the health system, and increasing the affordability of prescription medications have been used by the Jamaican government as key tools to improve the health of its population. While these factors play an important role in addressing the demographic and epidemiological transitions, more targeted age and gender sensitive policies are needed to address and improve the health of the elderly.

Addressing the health needs of the Elderly

Key to tackling the ageing/chronic disease phenomenon and its potential impact on economic and social structures will be the ability to develop strong public policies. These policies must seek to mitigate the impact on current and future generations, and also prevent inter-generational strife due to the increasing pressures on the young. This is particularly important in the Caribbean where personal financial resources are many times limited, and the cost and resources needed to care for the elderly many times falls on the wider family structure. In these settings, the elderly are taken care of not by government institutions but rather by immediate family members, and in return the elderly provide child-care and support to the family.

As the generational shift occurs and population attitudes move towards a more nuclear family setting, the burden for long-term care falls increasingly more on the shoulders of the elderly themselves. This implies the need on the part of the elderly

person for additional resources for paid 'home care', institutional care, and for maintaining their homes. The alternative of governments absorbing these costs and increasing social resources to addresses these needs is unlikely in the current economic climate. This is particularly true in Jamaica where the newly signed agreement with the IMF is unlikely to allow for increased spending on social programs.

Policy development aimed at promoting a 'healthy and active ageing' process will be key in reducing the costs posed by the elderly and chronically ill, and in reducing barriers to the continued engagement of the elderly in the labor force (WHO, 2002). Health policies that keep the elderly in good health for longer periods must intersect with solid social security policies so as to reduce the financial and social impact of ageing/illness on individuals and on the wider society. These policies must maximize and capitalize on not only the savings produced by improved health, but also on the additional years of healthy life gained. Gains in years of healthy life will allow governments to reduce "early withdrawal from the labor force" and protect national pension schemes from running bankrupt.

Improved health policies serve to reduce long-term expenditure on healthcare and social care. Research indicates that it is not ageing itself that causes dramatic rises in these sectors but it is actually poor health and disability that causes the skyrocketing of costs associated with the elderly (WHO, 2002). Improving health as a population ages, leads to reductions in functional and physical disabilities; this is projected to result in significant savings for both the elderly themselves, and for the government. Currently, billions of dollars goes into treating chronic diseases in the elderly; the over 85year old population is expected to triple their expenditure to $346 billion in 2040, over 1997

figures (Neifield, 1999). The expectation is that much of this cost may be defrayed if appropriate and relevant primary and secondary prevention practices are supported and encouraged at the policy level. The Center for Disease Control and Prevention has estimated that for every dollar invested into encouraging "moderate physical activity", $3.2 US is saved in medical costs (CDC, 1999).

The United Nations Principles for Older People advocate for 'Active Ageing' of the elderly population. This includes maintaining the independence, participation, care, self-fulfillment, and dignity of the elderly (WHO, 2002). The active ageing policy framework is built on three pillars for policy action: participation, health and security (See Figure 1.12).
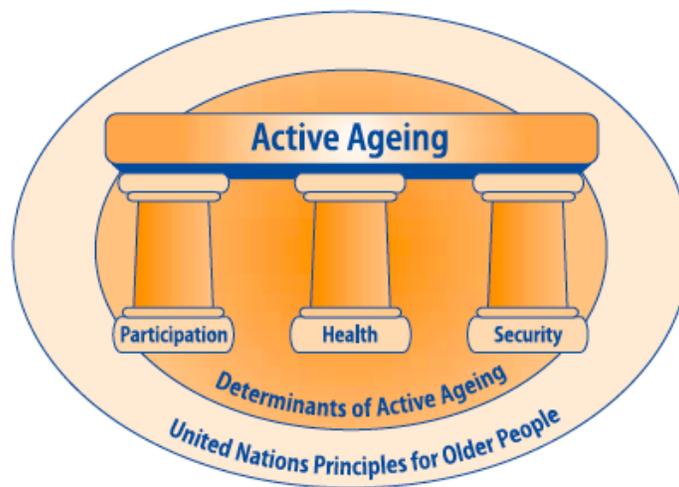
Source: WHO, 2002

Figure 1.12: The Three Pillars of the Active Ageing Policy Framework

'Participation' speaks to the need for the elderly to have the freedom and ability to engage in formal and informal labor markets, and participate in social, cultural and political contexts as they deem relevant. 'Security' refers to the ability of the elderly to be

socially, physically and financially protected and able to maintain their dignity as they age. The final pillar of 'health' refers to interventions that allow persons to attain both quality and quantity of life. This involves reducing the risk factors for chronic disease and functional disabilities, while increasing preventive interventions; a major determinant of healthy ageing is access to PHC services throughout one's lifetime (WHO, 2002).

The Madrid International Plan of Action, adopted in 2002 at the 2nd World Health Assembly on Aging, supports active ageing through a focus on health promotion, preventive services, and equitable access to health services (WHO, 2002). This approach translates into a focus on strengthening PHC and making it more culturally and gender sensitive, while addressing the age specific needs of this population.

Services associated with PHC are seen as providing the 'regular, continuing contacts and care that older people need to prevent or delay the onset of chronic, often disabling diseases and to enable them to be vital resources to their families, societies and the economy' (WHO, 2002). The WHO (2005) emphasizes that services should seek to possess the following characteristics: i) integrated with other areas e.g. secondary care, physiotherapy; ii) available; iii) accessible; iv) comprehensive; v) efficient; and vi) age and gender responsive.

Due to the special characteristics of the elderly cohort, the above principles of PHC are particularly important in addressing their health needs. Special characteristics include:

i. The clinical picture seen in the elderly may not be the same as in younger populations

ii. Lack of reserve capacities may result in earlier presentation of disease

iii. Though disease presents earlier, the elderly tend to present at a later stage for health care

iv. All levels of prevention are effective in the elderly, with small interventions producing dramatic impacts on overall health

(Mona Ageing and Wellness Center, 2011; MoH, 2011)

The development of health policies to address the demographic and epidemiological transitions in Jamaica must therefore be developed around an Active Ageing framework, and have at its core, interventions to strengthened PHC. For the purposes of this study, the 'health' policy pillar of the Active Ageing framework with special focus on PHC will be used to address the needs of the elderly and to promote a life course approach.

1.6.Primary Health Care in Elderly Populations

1.6.1 Health Vulnerabilities and the Elderly

The term 'vulnerability' is widely used throughout health care literature without a clear consensus on its definition. Phillips (1992) defines the term as a 'susceptibility to health problems, harm or neglect', while Aday (1993) defines vulnerable populations as those 'at risk of poor physical, psychological and/or social health'. Rogers (1997) on the other hand takes a different approach by defining vulnerability as possessing intrinsic attributes that lead to/promote poor health, thus leading to the 'individual determinants model'. This model considers vulnerabilities to be due to intrinsic, individual characteristics of clients such as age, gender, education, race/ethnicity and life changes. The three major life stages (i.e. childhood, adolescence and old age) are considered inherently vulnerable periods, as they can impair health and functionality due to pathways associated with their limited desire/ability to negotiate on their own behalves

and to engage in health promoting activities. Shi and Stevens (2010) further classifies the vulnerable population into a medically vulnerable group consisting of the chronically ill, disabled and elderly. They further state that the complexities, severity and long duration of illnesses in this group impose a significant financial and human resource strain on health systems.

Current frameworks such as that of Aday and Andersen (1974; 1995), include not only individual risk factors but also community, social and political influences. These frameworks represent a paradigm shift away from individualistic models towards more comprehensive, multi-level models where there is a convergence of risk factors to produce vulnerabilities. Using this 'multi-dimensional construct', vulnerabilities in the elderly are attributed to the high prevalence of chronic diseases, decreases in physical, cognitive and functional abilities, intertwined with social changes that increase isolation and reduce financial independence (Aday, 1993; Gitterman & Shulman, 1994). The paradigm shift implies a change in tackling poor health outcomes caused by these vulnerabilities from a medical based perspective to a more comprehensive approach, encompassing individual, social and community responsibilities. This is a fact that WHO embraced in the 2002 Active Ageing framework.

The elderly in the Caribbean for example, are considered a vulnerable population that must be protected, due to the following characteristics: they have an increased burden of chronic illnesses; declines in functional capacity; decreased financial independence; and increased social isolation. They are also exposed to high levels of poverty, unemployment, illiteracy and violence in the region. Most elderly persons in the Caribbean have never worked in the formal labor sector, and so are ineligible for most

government run pension and insurance schemes (Palloni & McEniry, 2006). Those who are eligible for pensions are unable to survive through this means only, as the pension rates are below the 'cost of living' in most LAC countries (Zunzunegui, 2008). Additionally, due to high levels of emigration of the youth population, the elderly are many times left with inadequate or inconsistent levels of social support (ECLAC, 2004). The feminization of the elderly also increases the vulnerability of this group. In fact, compared to men, they are more likely to suffer a variety of oppressive conditions, including domestic violence, illiteracy, and reduced access to food, employment, social security and healthcare. These accumulated risks result in women being more likely to be poor and have disabilities in their old age as compared to men (WHO, 2002).

The vulnerabilities of the elderly indicate the need for targeted polices to ensure equity between generations in accessing health services. Policies need to address ecological risk factors through social policies such as income and educational disparities, built environment, and health policies through the improved organization, distribution and delivery of health care to improve access and utilization of services. Ensuring access of this population to timely and continuous care will be important in preventing and reducing the complications of the ageing process.

1.6.2 Primary Health Care

The World Health Organization (WHO) defines Primary Health Care (PHC) as "essential health care based on practical, scientifically sound and socially acceptable methods made universally accessible to individuals and families in the community" (WHO, 1978). PHC provides preventive and curative services at the first level of contact in most health systems (American Academy for Family Practitioners, 2012), and allows

for individualized patient care with increased access to health staff. When operating in an effective manner PHC allows for a routine source of care for all members of its population thus providing equitable access and continuity of care to even the most vulnerable (WHO, 1978).

In terms of staffing, PHC physicians are considered to be general practitioners, general internists and general pediatricians, as these three (3) physician categories are thought to best reflect the principles of PHC (Weiner & Starfield 1983). In industrialized countries the health team in PHC may include a General Practitioner (GP), a Family Health Practitioner, a community nurse, a practice nurse, social worker, therapist and administrative staff (WHO & Health Evidence Network (HEN), 2004; Klien, 1995). This may expand to include up to 20 team members in areas where PHC is highly evolved (Starfield, 1992) (see Table 1.5).

Table 1.5: Full Complement of a PHC Team

Medical	Paramedical	Administrative	Therapists	Social
General practitioner	Community nurse	Practice manager	Physiotherapist	Social worker
Dentist	Practice nurse	Receptionist	Chiropodist	Community psychiatrist
Community geriatrician	Ophthalmic optician	Assistant	Speech therapist	Psychologist
School medical officer	Midwife	Secretary	Osteopaths	Counsellor
	Health Visitor		Dietician	Domiciliary aid
	Pharmacist			

Source: Starfield, 1992

Primary health care has a positive association with good health outcomes. In fact Starfield (2005) proposes that: i) health outcomes are better in areas with more primary care physicians, and ii) people who receive routine care from primary care physicians are healthier than those who receive routine care from other sources. These two points are explored below.

i) Health outcomes are better in areas with more primary care physicians.

In regards to this point, Shi et al have shown that US states with higher primary care physician to population ratios tend to have better health outcomes even after adjusting for demographic and socioeconomic variables. These outcomes include: all-cause mortality; disease specific mortality (heart disease, cancer and stroke); infant mortality; low birth weight; and improved self-reported health status (Shi, 1992; Shi, 1994). Vogel and Ackerman (1998) support these assertions, with findings that indicate a positive association between PHC physician density and life expectancy.

Evidence from the United Kingdom (UK) shows a similar relationship between PHC physician density, and health outcomes. In the UK, it was found that for every additional GP per 10,000 populations there was a reduction in the population-level mortality rate by 6%. Additionally, every 15% to 20% increase in GPs per 10,000 population resulted in a decrease in hospital admissions by approximately 14 per 100,00 population for acute illnesses, and 11 per 100,000 for chronic illnesses. (Guilliford, 2002) In an international study of 18 wealthy countries, Macinko and Starfield (2003, p 1) show that as the strength of a country's PHC system increased then 'all-cause mortality, all-cause premature mortality and cause-specific premature mortality from major respiratory and cardiovascular diseases' decreases.

The converse relationship between health status and PHC has also been reported, where the absence of PHC showed the strongest association with poor health as compared to other key variables (Shea, 1992).

ii) People who receive routine care from PHC are healthier than those who don't.

This point is illustrated by findings that the patients of PHC physicians have lower five-year mortality rates compared to those of specialists, even after adjusting for initial health status, insurance coverage and demographic factors (Franks & Fiscella 1998). Additionally, specialist care is associated with higher costs and reduced access to vulnerable populations (Schroeder, 1993; Rivo, 1993), making it an efficient means of caring for common ailments.

1.6.3 Characteristics of Primary Health Care

The strength of PHC lies in its innate properties, through which it improves health outcomes. Five such properties include: the promotion and delivering of preventive care; increased access to ambulatory care; relative affordability; improved quality of care; and continuity of care. These five (5) features are discussed below.

i)   *Clinical preventive services*

PHC is known to be important and effective in providing preventive care such as pap smears, mammograms and prostate exams and for providing preventive services for conditions which have well accepted management guidelines (Harris, 2009). Increased access to preventive services in PHC may be due to the continuity and comprehensiveness of care afforded by PHC facilities and due to the greater accessibility of these community-based facilities. Bindman et al (1996) found that a 'regular source of care' as found in PHC is one of the most important factors associated with receiving

preventive care such as mammograms, pap smears, blood pressure screenings ($p<.0001$). These preventive services act to reduce the personal and societal costs of preventable diseases and their complications. Another study of which compared persons who visit community health centers versus other sources of care showed that PHC patients were more likely to have had a mammogram and to have been vaccinated against pneumococcal infection (Regan et al. 2003). A high density of PHC physicians is not only associated with uptake of preventative services but also with earlier detection of breast, colon and cervical cancer (Roetzheim et al., 1999; Ferrante, 2000; Campbell, 2003).

ii) *Increased access to ambulatory care*

Ambulatory care–sensitive conditions (ACSC) are those that if appropriately managed by 'out-patient care' hospitalization should not be necessary, or for which early interventions can prevent serious complications. Such conditions include hypertension, pneumonia, asthma, chronic obstructive pulmonary disease (COPD), complications of diabetes and congestive heart failure (CHF). (Agency for Healthcare Research and Quality (ARHQ), 2002; Parchman, 1999) PHC through its community-level accessibility and continuity of patient care, has been shown to reduce hospitalizations (Chaix, 2005; Parchman, 1999; Hendriksen, 1984) by i) preventing the onset of the disease, ii) controlling acute illness and iii) managing and preventing the progression of chronic diseases (Parchman, 1999; Comino et al., 2012).

Increased access to care through PHC services not only increases use of ambulatory care and reduces unnecessary hospitalizations but also increases the opportunity to get needed care, improves health status (Shi, 1994), reduces utilization of expensive specialist services/emergency centers (Martin, 1989), and reduces the chance of undergoing inappropriate health interventions (Siu, 1988).

iii) Cost

Preventing disease onset/complications through ongoing interaction with PHC has proven to be a cost effective alternative to Emergency Room treatments and hospitalization. Secondary care consumption is associated with increased costs due to specialist care, expensive technologies and procedures and the propensity to treat illnesses rather than to prevent them (WHO, 1978; Starfield, 2005). Visiting PHC instead of other sources of care for a particular illness has been shown to reduce expenditures by 53% (62% for acute care, and 20% for preventive care) (Forest & Starfield, 1996), even after adjusting for key confounders such as disease mix and length of episode.   In fact, Rosser (1996) and Whittle (1988) found that for common illnesses such as community-acquired pneumonia, specialist care is more expensive and shows no significant difference in health outcomes, as opposed to being treated by a generalist. International comparisons support the theory that a poor PHC system is associated with higher costs of care. The international study by Starfield and Shi (2002) shows a Pearson's correlation coefficient of .61 between the two variables, at a significance level of <.001 (r=.61, p<.001).

iv) Improved quality of care (and reduction of inappropriate specialty care)

PHC is associated with high quality health care due to its focus on the general health of the patient rather than on disease-specific outcomes; this comprehensive view of health is associated with 'superior care', and lower mortality and morbidity rates (Starfield, Shi & Macinko, 2005). PHC is associated with quality care especially for common conditions found in the community.

A systematic review undertaken by Griffin and Kinmonth (1998) found that GPs who are given additional education and sensitization, in addition to electronic reminders had diabetic patients with better long-term glucose control (as determined by Hb1c), lower mortality rates and better compliance rates than did patients treated by specialists. One theory supporting the quality of care provided by PHC staff for common illnesses is based on the fact that specialists are usually hospital-based doctors who are exposed to high-risk clients whose disease profile may be very different from that of the general population. This difference in disease prevalence in the two populations has implications for the interpretation of diagnostic tests i.e. sensitivity, specificity and positive predictive power of tests. This may lead to situations where an unaware specialist may over-estimate the odds of disease in the general population and consequently over-diagnose and over treat these patients (Hashem, Chi & Friedman, 2003).

v) Continuity of care

By definition of their roles, primary care physicians are more likely than specialists to provide continuity of care. PHC providers supply care either through 'first-contact' access or through continuity of care through regularly scheduled visits. First contact visits usually serve as the initial interaction with the health system, and allows

patients to be assessed and monitored, and if necessary referred on to specialist care (Forrest & Starfield, 1996). Continuity of care on the other hand implies that individuals will routinely seek/use a particular provider when in need of health care. Continuity of care increases interactions between patients and physicians, thus providing the opportunity for physicians to become familiar with patients, their medical histories and their social environment. This familiarity allows for early identification of departures of health, and allows for a patient-centered approach to be taken, thus leading to better outcomes. Short waiting times for appointment, having health insurance, and longer opening hours are have been identified as facilitators of continuity of care (Forrest & Starfield, 1998). This 'continuity' results in: 'improved satisfaction, better medication and appointment compliance, enhanced physician recognition of the patient's health needs, reduced likelihood of hospitalization, lower use of emergency rooms, and less resource intensive medical care' (Forrest & Starfield, 1998; Starfield, 1992). In fact Weiss & Blustein (1996) indicate that long term patient physician relationships result in less expensive and less invasive care for the elderly.

Primary Health Care as a community-based service is crucial in addressing the needs of vulnerable populations. This is especially true for the elderly population who on average has a higher burden of chronic health problems, less physical mobility and less financial resources when compared to the general population. PHC is important for this medically vulnerable population as it may improve their quality of life and health outcomes. Evaluations into PHC access and utilization patterns for the vulnerable elderly is consequently important in identifying appropriate policy directives for improving the health of this population and reducing costs associated with their care.

1.6.4 Access to and utilization of primary care

Access to- and utilization of primary care services are widely accepted determinants of health; these determinants have a significant impact on morbidity and mortality rates within a population (WHO, 2000b). The 'access to care' construct refers to the ability of persons to enter and negotiate through the health care system as the need for health promotion, maintenance and treatment arises; it is a measure of the 'degree of fit between the clients and the system' (Higgs, 2005). 'Access' includes the ability to receive preventive health care services, the likelihood of receiving treatment for certain illnesses, and being able to get illness-related physician visits.

Vulnerable groups are characterized as having decreased access to- and utilization of care as compared to the rest of the population. Consequently, for reductions in mortality and morbidity to occur amongst the vulnerable, they must be able to access and utilize appropriate and effective health services as the need arises (Xu, 2010, Andersen, 1974). Limited access and utilization of PHC places an unnecessary burden on human and financial resources, diverts attention from other needy patients, and leads to costly secondary care alternatives (Rust et al., 2008). Reduced access and utilization also implies economic losses due to unnecessary Disability Adjusted life Years (DALYs) that have accumulated for ambulatory-sensitive conditions. This implies a reduced ability for the vulnerable to effectively engage in labor markets and to provide social capital in their communities.

Increasing access and utilization of PHC to vulnerable groups such as the elderly, is not always a simple matter as access may be compromised at many levels (Comino et al, 2012) and through a combination of factors. Significant barriers to access may exist

within the health care delivery system and/or within individuals, thus blocking the potential benefits of a PHC system (Rogers, 1997; Andersen, 1995). 'Access' should be evaluated frequently amongst the vulnerable populations so as to ensure equity of care and good health outcomes.

Access may be evaluated based on process and outcome indicators which reflect key characteristics of health systems (Aday & Andersen, 1974; Zuvekas & Weinick, 1999) and which help to determine the equity with which services are provided between vulnerable and non-vulnerable populations (see Figure 1.13 below). Based on the presence or absence of these indicators, appropriate interventions may be undertaken to ensure that equitable access to care exists. This means that elderly persons in need of medical attention will be able to utilize services as easily as non-elderly and non-vulnerable groups.

Evaluating Access to Primary Health Care

Process Indicators	Outcome Indicators
Affordability • Cost of service • Insurance	**Utilization** • Service type • Service site • Purpose of care • Frequency of use • Continuity of service
Accommodation • Opening hours • Making/canceling appointments	**Satisfaction** • Cost • Convenience • Coordination • Friendliness
Acceptability • Location • Client education, income • Provider gender	
Accessibility • Distance • Transport • Disability access	
Availability • Drugs • Tests • Staff	

Source: Higgs, Penchasky, Andersen

Figure 1.13: Evaluating Process and Outcome Indicators of Access to PHC

Process indicators reflect the characteristics of the health system and of potential clients that may affect entry into the health system; they are indicators of 'potential access' but not realized access to the health system (Aday & Andersen, 1974). These indicators are important in understanding the barriers and facilitators of access within a system, and can aid in the development of effective policies aimed at equitable access between groups, or increased access for vulnerable cohorts. Process indicators commonly used to evaluate 'Access' include:

i. *Affordability* of entering and utilizing the system. This may include factors associated with the cost of services and with the population's access to health insurance. Lack of health insurance is a consistent and strong predictor of poor access (Shi & Stevens, 2010); US studies indicate that insurance provides the greatest impact on health through its role in increasing access to PHC (Lille-Blanton & Hoffman, 2005). Without insurance vulnerable populations will be less likely to have a regular source of care, thus reducing their health outcomes. Out of pocket costs also acts as a major barrier to accessing care, especially in the elderly (Fitzpatrick et al., 2004).

ii. *Accommodation* of the needs and desires of the client. This may be accomplished through patient-centered organization and delivery of services. Accommodation factors include office wait times, opening hours of the facility (Forrest, 1998), ability to get an appointment in a timely manner, and the ease with which appointments can be made/cancelled (Aday, 1974). The availability of non-traditional opening hours such as early mornings, evenings and weekends are may also help the elderly who rely on family members to take them to the doctor.

iii.   *Acceptability* of the unchangeable characteristics of the provider and client. This includes culture and ethnic differences that may exist between provider and patient (McLaughlin & Wyszewianski, 2002; Penchansky & Thomas, 1981); known political or religious associations of the health facility; the gender and education status of the provider (Aday & Andersen, 1974); and neighborhood/location of the facility (Nutbeam, 2008). Poor communication and discrimination against clients was also identified by Nutbeam as a potential acceptability barrier; this may be especially important in elderly populations who may have some amount of cognitive impairment and who may be overwhelmed with information about their comorbidities.

iv.   *Accessibility* of health facility locations. This may be quantified by geographic accessibility (i.e. road distance and travel time) of the facility; the availability and frequency of transport systems; and disability access to transport systems and to the facility itself. Utilization of services has been shown to have an inverse relationship with distance to the physician (Nemet & Bailey, 2000; Comber, Brunsdon & Radburn, 2011). Distance has been shown to be a significant barrier for the elderly as they tend to have less access to personal or public transport (Nemet & Bailey, 2000). Having public transport that are accessible to the functionally impaired or disabled may be as important as having access to bus routes.

v.   *Availability* of resources and technology. Availability of resources to address the health needs of the client will help to determine the level of access that patients have to these services. Such resources include diagnostic tests, pharmacy and drug availability, and the availability of comprehensive categories of health staff (McLaughlin & Wyszewianski, 2002; Penchansky & Thomas, 1981). Availability of PHC staff

(dietician, dentist, mental health officer) and resources have been shown to reduce the risk of hospitalization by 70% in Medicare recipients (the elderly) with fair to poor health (OR=1.70; 95% CI 1.09-2.65) (Parchman, 1999).

(Adapted from Higgs, 2005; Penchansky & Thomas, 1981)

Outcome indicators (contrary to process indicators), reflect whether entry into the health system has been gained and if passage through the system has been facilitated to the point of actual utilization of the services (Aday & Andersen, 1974). These indicators offer external validation of having achieved access to health services (Anderson, 1995), and offers proof that 'access' exists within the population. Two major outcome indicators are: i) patient utilization and ii) patient satisfaction.

i) *Utilization* ('realized access') may be described by the following variables:

- Type of service used (e.g. PHC, pharmacy, specialist, emergency room, dental)

- Services site (e.g. private, public, home)

- Purpose of care (e.g. preventative, curative, stabilization)

- Frequency of use (e.g. mean number of visits, routine source of care)

- Continuity of service (e.g. effective referrals, number of providers per concern)

(Aday, 1974)

'Frequency of use' is a common metric to evaluate utilization; both 'mean number of visits' and having a 'routine source of care' are considered significant indicators of poor access. 'Mean number of visits' is usually assessed over a 12 month period, with no visits to a physician in that period being accepted as a gross indicator of poor access

(Weissman, 1993). Having a 'routine source of care' is the other widely accepted proxy for evaluating 'frequency of use' and patient utilization. Having a 'routine source of care' is associated with increased access to the health sector, and to the utilization of preventative services. Routine sources of care are also associated with continuity of care for clients and with receiving timely and adequate medical care (Chen, 1987). The inverse has also been shown to hold true, where lacking a routine source of care (Chen, 1987) and a routine physician (Weissman, 1991) are strong predictors of poor access and poor outcomes.

The highly acclaimed Andersen-Aday behavioral model for accessing health services, identifies having a regular source of care and health insurance as key enabling factors in promoting the utilization of health services (see Figure 1.14). Sox et al (1998) found that having a routine physician is a stronger and more consistent determinant of poor health seeking behaviors than lacking health insurance. This relationship holds true even after controlling for clinical and socioeconomic factors. On comparing the relative importance of having a 'regular source of care' and having 'health insurance' it was found that regular source of care had a more significant influence on utilization of services. In fact, patients had a 350% increased odds of not visiting the doctor in the past 12 months if they had no routine source of care, as opposed to not having insurance (OR=4.5; 95% CI 3.3-6.1) (Sox, 1998). Additionally, there was a 60% and 80% increased odds of delaying emergency care and having an emergency room visit in the last year, if patients did not have a routine source of care compared to not having insurance (Sox, 1998).

Utilization may also be defined in terms of efficiency and effectiveness measures. 'Effective access' occurs when health status improves due to the utilization of health services, while 'efficient access' occurs when health improvements increase relative to the amount of health care utilized (Andersen, 1995). Once 'effective access' is confirmed within a health delivery system, then an analysis of 'efficient access' needs to be undertaken to ensure that resources are being used in the most appropriate way possible to improve health outcomes. Effective access without efficiency will result in wasted resources while health outcomes suffer.

ii)   *Patient satisfaction* is the second outcome indicator, and is determined by the proportion of persons satisfied with the following aspects of the care:

- Cost

- Convenience

- Coordination with other health facilities or allied health services

- Friendliness

1.7. Behavioral Model for Access to Primary Health Care

One of the most significant and widely used behavioral frameworks for access to health care is the 'Andersen-Aday' model. It is a multi-level model that highlights the 'predisposing', 'enabling' and 'need' factors found at the population and individual levels, that are needed to explain and predict access to care. The model illustrates how the population and individual characteristics work together to affect vulnerabilities and consequently the utilization of health services. The final outcome in the model is 'health status' which is a direct function 'utilization'; this underscores the strong association between access and utilization of services, and improved patient outcomes (Figure 1.14).

Population-level Access

'Predisposing' factors, at the ecological level include the economic and political environment; education and employment rates; health beliefs and attitudes; and low social capital in the community where clients try to access services. These factors are usually thought of as immutable characteristics that health policy and interventions are unlikely to be able to change. Predisposing factors directly impact the type, distribution and funding of health services in communities. The greater the political will and the better the economic conditions are, then health facilities are more likely to be better organized to deliver highly accessible care.

'Enabling' factors are health system factors that facilitate or hinder persons trying to utilize health services. Enabling characteristics include provision of services that are available, physically accessible, affordable, acceptable and accommodating to the needs of its clients. Enabling factors must be present if access is to occur.

'Need' factors exist in communities due to the interaction of predisposing and enabling factors. The 'need' variable is reflected in the behavioral patterns of the population (e.g. smoking and alcohol consumption rates) and its mortality and morbidity rates (e.g. obesity rates, prevalence of chronic diseases and mortality due to ambulatory sensitive conditions). The health needs of the population is not only fed by the predisposing and enabling characteristics of the population, but there is also a feedback loop where high health demands and poor health status will burden the health system and reduce its ability to provide effective and accessible services. Poor health status of a population may result in less persons retaining employment and may potentially cause political tensions, unemployment and poverty rates in the community to rise.

RISK FACTORS

Population Characteristics

Predisposing Factors
Political environs
Residence
(rural/urban)

Individual Characteristics

Predisposing Factors
- Age
- Gender
- Culture
- Health beliefs

Health Status

Chronic Disease

Mental/cognitive ability

Enabling
e.g. Organization &
delivery of health care
- Availability Accessibility
- Affordability
- Acceptability
- Accommodation

Enabling
- Insurance
- Income
- Transport
- Social support

Vulnerability to poor health

Regular Source of Care

UTILIZATON of services

Functional ability (vision, hearing, physical)

Functional Capacity (frailty)

Need
- Behavior patterns (smoking, diet)
- Chronic disease mortality and morbidity rates
- SES Disparities

Need
(Perceived/Evaluated)
- Chronic disease
- Functional ability
- Cognitive ability

POTENTIAL ACCESS
(Process Indicators)

REALIZED ACCESS
(Outcome Indicators)

Adapted from Andersen & Aday, (1993); Shi & Stevens (2010)

Figure 1.14: Behavioral Framework for Access and Utilization of Health Care

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Individual Level Access

Population level factors directly impact the predisposing, enabling and need factors of individual clients. The 'predisposing' factors that affect individual access to care include their age group, gender, religion, culture and their beliefs about health. These factors may act to restrict or encourage access to services, with their impact being context specific.

'Enabling' factors include access to health insurance, to a source of income, to transportation and family/community support. These factors are directly influenced by population- and individual-level predisposing factors such as their age and gender. For example, old age in the US would be a key predisposing factor that 'enables' individuals who are over 65 years to access health insurance (Medicare); in other countries however, the gender of the client may play a large role in whether the patient has a source of income, and whether they can utilize physicians of the opposite sex.

'Need' factors include the client's perception of their health; how they interpret and deal with symptoms of their illness; and the importance they attach to these concerns (Andersen, 1995). Perception of what good health is, and what requires medical intervention is important in determining utilization of services. Health needs include chronic disease diagnosis, cognitive impairment and functional ability. Population factors (such as cultural attitudes towards illness and health services) and individual factors (both predisposing and enabling) affect how clients perceive their need for health care and their health seeking behaviors. Need as evaluated by a health professional may also serve as an incentive for individuals to try to access and utilize care.

Vulnerability

Both population and individual characteristics represent sources of potential access to services. If these factors are at the appropriate levels then health care should be easily and equitably accessed in the population. Population and individual characteristics intertwine in a complex fashion to determine the level of 'vulnerability' that exists in clients. Determining one's 'vulnerability' status is a crucial point in the behavioral framework, as it links the two halves of the model. It illustrates how population and individual characteristics can result in vulnerability to poor health, and how this may or may not translate into actual utilization of services. High vulnerabilities are expected to translate into low utilization of services and poor health outcomes.

Utilization of services is seen as the actualization of the access construct; clients who have utilized the health system by definition must have achieved 'access' to the system. Utilization is therefore an important outcome indicator for 'access' in this model.

Most health policies address vulnerabilities and poor access by targeting the population and individual level 'enabling' factors. These factors are seen as mutable and are the ones that are most likely to be changed and improved through policy development and implementation. Since utilization cannot occur without enabling factors (Andersen, 1995), the more that is done to improve these factors, the better access is expected to be.

Based on the Andersen-Aday framework, it is evident that policy development to address the specific needs of the elderly cohort is important and urgent if increased utilization of healthcare is to occur. The enabling factors found at the population level (i.e. organization and delivery of healthcare) and at the individual level (e.g. health insurance) must be strengthened wherever possible to better facilitate the needs of the

elderly. Policies must be multidimensional and consider the specific needs of the elderly, taking into consideration the feminization of the elderly, and the wide-range of functionality existing within this group.

1.8 Significance of the Problem

Jamaica is currently undergoing both a demographic and epidemiological transition. The elderly population is currently growing at a faster annual rate than the general population, and is expected to represent 24% of the population by 2050. This trend is in line with the extremely high rates of elder growth seen in the Latin America and the Caribbean region (Palloni and McEniry, 2006). A trend towards a higher disease burden due to chronic illnesses is also underway, with 68% of the total island-wide mortality being due to chronic diseases and their complications. This shift away from a high infectious disease burden may be due to numerous inter-related factors including, improved public health and living conditions, and the increasing age of the population.

While the demographic and epidemiological transitions may occur independently of each other, they usually go hand-in-hand. Traditionally, the 'elderly' are associated with an increased burden of chronic diseases and their complications. It therefore stands to reason that ageing populations, where the median age is slowly shifting upwards, would experience a progressively higher burden of chronic illnesses through the pathway of natural ageing. The demographic and epidemiological transitions may therefore be seen as complimenting and reinforcing each other.

The significance of these transitions for Jamaica are: i) the burgeoning elderly cohort are considered high-risk due to their high NCD burden and are in need of targeted interventions; ii) due to the demographic transition there is relatively smaller tax base to

fund elderly programs; iii) the rapidly changing family structure does not provide a means for caring for growing elderly; and iv) chronic diseases are associated with significant individual and societal costs.

The elderly in Jamaica are considered a high-risk population that must be protected to ensure that goals of equitable access to healthcare are achieved. This cohort experiences a high burden of chronic illnesses; declines in functional capacity; decreased financial independence; and increased social isolation. Access and utilization of health services in vulnerable groups are usually low; this is associated with reduced physical, cognitive and functional ability. These factors indicate the need for targeted policies and resources, to maintain and improve the health of this population.

The demographic shift in Jamaica is trending towards an equal proportion of all age groups within the population. The significance of this is that it results in a progressively larger proportion of elderly persons compared to younger persons and implies that there will be a comparatively smaller 'working age' group paying taxes into social programs for the elderly. For a resource-limited country, with a small tax base and a growing elderly and chronically ill population, maintaining health programs may become progressively difficult to achieve. Health related programs that may be affected include the provision of: 'free' primary and secondary care; prescription drug subsidies for chronic illnesses (JADEP); health insurance coverage (NI-Gold); and pension schemes to the Jamaican elderly. These services are important to maintaining access and utilization of health services to the elderly, and consequently maintaining and improving their health status.

The epidemiological shift has significant implications in the elderly population and for the government of Jamaica. Chronic diseases are associated with an increased risk of functional disability, increased individual costs (many times at the risk of bankruptcy if care has to be sought in the private sector); increased risk of depression and social isolation; lost productivity in the formal and informal labor force; lost tax revenues; and lowered returns on human investments. These NCDs are expected to keep increasing, with middle-income countries like Jamaica being expected to increase its burden by 15% between 2008 and 2030 (National Institute on Ageing, 2012). Overall, every 10% increase in chronic diseases is estimated to reduce a country's annual growth rate by 0.5% (WHO, 2010), thus potentially hampering the development goals of the country.

The demographic and epidemiologic transitions are significant factors in the Jamaican health sector. Neglecting to respond aggressively to these events will result in increasing financial, productivity and non-financial social costs to various players within the health system (see Table 1.6).

To reduce the massive direct and indirect costs associated with chronic diseases and its complications, aggressive primary and secondary prevention strategies must be employed, in conjunction with improving access to health care services. Such strategies should include targeted polices for the elderly populations that have a disproportionate burden of chronic illnesses and who tend to be vulnerable with less access to health care. If the health of this group is maintained, then the healthy elderly will be able to remain in the formal and informal labor force for longer periods.

The UN urges developing countries to start preparing for and addressing these problems, warning of the difficulties that will ensue from adjusting social and economic institutions when the problem is too advanced.

Table 1.6: Cost of Missed Opportunities or Mismanagement of Eldercare

	Financial Costs	Productivity Costs	Non-financial Costs
Older persons	Service fees (if applicable)	Lost productivity at work or home	Poor health outcomes; reduced quality of life
Family caregivers	Loss of income due to caregiving needs	Lost productivity at work or home	Reduced quality of life
Local health providers	Iatrogenic problems and resources put into inappropriate care	Reduced productivity due to time spent caring for poorly managed conditions	Frustration and reduced job satisfaction
Health care system	Cost related to poor use of emergency care	Unproductive use of resources, increase of other unmet needs	System overwhelmed by unmet needs
Overall results	Private and or public resources invested in "catching up" and most expensive "treatment" rather than on promotion, prevention, and rehabilitation	Increased disability and decrease in healthy life expectancy	Inefficiency of system; lost opportunities to postpone illness and disabilities related to age

Source: PAHO, 2002

1.9 Study Rationale

Latin America and Caribbean (LAC) countries are known to have an accelerated demographic transition, within a volatile economic and development environment (Palloni & McEniry, 2006). The rapid ageing of the LAC population is uncharacteristic of international trends and as such the adoption of North American or European frameworks to address the problems associated with the demographic shift, are unlikely to be relevant in this context. It is therefore important for LAC countries to clearly define the terms of their demographic transition and be aware of the specific ageing dynamics that exist within their borders.

In Jamaica, the only comprehensive, nationally representative epidemiological survey of the elderly was undertaken in 1989. More than 20 years later the original researcher, D. Eldemire-Shearer executed another nationally representative survey of the elderly (The Elderly Project, 2012). This study sought to identify the "prevailing situation, the new challenges and needs, the unaddressed gaps, and emergent issues" that this cohort has experienced since the first survey (Eldemire-Shearer, 2011).

Data from the Elderly Project 2012 (Appendix B), will be used to determine the health profile of the elderly in Jamaica (chronic disease, cognitive/mental acuity, functional capacity, and disability); and to better understand their access to- and utilization of health services. From these analyses, a PHC policy that targets the specific needs of the elderly will be developed and shared with the Government of Jamaica.

This study will be beneficial to the Jamaican health sector due to the four following reasons: i) it provides cost savings through the prevention of declines in health; ii) its timeliness and relevance; iii) provides evidence to aid the re-distribution of resources based on identified population needs; iv) changing family structure; and finally, v) the development of actionable, translatable policies in line with international standards.

Cost savings through prevention

By better understanding the health conditions prevalent amongst the elderly and the issues that affect their access to- and utilization of PHC, policy interventions can be targeted to improving their health outcomes and preventing disability. It is a widely accepted myth that chronic disease and extensive medical costs are inextricably intertwined with advanced age. It is not ageing itself that causes dramatic rises in these

sectors but it is actually poor health and disability that causes the skyrocketing of costs associated with the elderly (WHO, 2002). AS such relevant measures should be undertaken to prevent these losses.

Prevention of illness/disability and the promotion of healthy lifestyles can therefore significantly reduce the costs of the growing elderly population on the health sector and the wider economy. The implementation of primary (promoting a healthy lifestyle), secondary (identifying early departures of health) and tertiary (reducing functional disability) prevention policies can improve quality of life amongst the elderly and help maintain the physical, social and financial independence in this cohort.

Strengthening the access of the elderly to PHC services (including dentistry, pharmacy, and physician care) by improving its acceptability, affordability, accessibility, availability and accommodation will serve to reduce the prevalence of chronic disease, functional disabilities and hospitalizations, and the financial and labor market costs associated with each.

Timeliness and relevance

The 'demographic dividend' or the 'demographic bonus' occurs as birth rates fall, causing the age structure to compose of more of the working population compare to other age groups; this period is associated with an increase in development and economic growth (Singariya, 2012) and is an important window of opportunity for long term development policies to be implemented. For Jamaica, 1980-2025 is such a period, allowing for elderly policies to be put in place while the youth population is still relatively large enough to contribute to savings and investments strategies to build the economy and protect future generations (Eldermire-Shearer, 1998).

In order for effective, applicable policies to be developed however, up-to-date information on the current health and social status of the elderly must be made available and easily accessible to decision makers.

Reorganization and re-distribution of resources

The shifting population structure that occurs with the demographic transition "creates social and political pressures on a society to change its pattern of resource distribution…" (UN, 2002). On the part of the government, it implies a need for a re-organization of the current health system to better address the needs of this rapidly increasing portion of the population. The re-direction of resources to increase the accessibility of transport and health services (especially to PHC) for the elderly will be crucial, if their growing needs are to be meet in the most cost effective manner possible. It is important to note that broad social policies will not be effective in this context as the elderly population is heterogeneous.

The profile and needs of subpopulations of the elderly based on: i) age (the 'young old' versus the 'old old'); ii) gender; and iii) functional capacity will be important in producing effective policies. In terms of age, for example, the oldest old is expected to continue being the fastest growing section of this group, it is therefore expected that this group will eventually become more and more relevant in the decision making process in the health and social sectors. Another subgroup that must be identified and carefully planned for is that of elderly females, who are more prevalent than their male counterparts.

Compared to men, females in the Caribbean are generally less educated, have less work experience, and less access to pension schemes and private income sources. These specific characteristics indicate the need for specially considered interventions to ensure their access to services and improve their health status.

The WHO warns against providing services that are not specific enough for the target group, stating "enacting broad social policies based on chronological age alone can be discriminatory and counterproductive to well-being in older age" (WHO, 2002; p 3).

Changing family structure

The dramatically changing family structure in Jamaica (since independence in 1960) makes the health status and the health care access and utilization patterns of the elderly even more important for policy planners. The health needs of the elderly have and will continue to change as this population grows and as Jamaica becomes increasingly urbanized. Eldemire-Shearer (2012b) points to three major changes in family structure that may affect how we plan for elder health. These are: i) life expectancy has increased greatly, resulting in the needs of the elderly needing to be met for longer periods of time, and on a rapidly devaluing Jamaican dollar. Due to cultural norms, additional length of life is many times not planned for by the elderly, causing them significant financial hardships, and reduced ability to access health promoting activities. ii) The fertility rate has fallen dramatically over the past few decades, so the elderly now have one or two children to depend on in their old age for emotional, financial and physical support, instead of the 6-8 children of previous generations. Children can therefore no longer be solely depended on as a parent's 'old age pension' as this urban may be too heavy for 1-2 children to bear. iii) Urbanization has resulted in families no longer living as extended

families/communities. Instead children, especially female children who used to have the major role as caregiver of ageing parents, now live greater distances away from their parents and are less able to provide them with the required care and assistance. These changes in the family pose significant issues for the management of a growing elderly population, who lack a cultural bias and understanding of retirement planning, and who have reduced family support to help them manage daily activities. Without prompt short and long term interventions, the elderly in Jamaica may become and extremely expensive extremely expensive burden to the Jamaican government.

Development of translatable, evidence-based policies

Due to significant differences in the economy, and the rate of the population shift between developed and developing countries, it is important to develop context specific policies that reflect the needs of the Jamaican/Caribbean situation. Policies from developed countries may (as they have in the past) prove ineffective and difficult to adapt in our context. Our limited resources and differing population structures imply the need for local evidence to inform our decision-making and policy development for the elderly. The 1989 and 2012 surveys provide such needed information. The development of a i) health and ii) a access and utilization profile for the elderly can be used within the context of international frameworks and best practices, to develop targeted policies for this cohort. Policies and strategies must be practical, actionable, politically sensitive and most of all feasible within the limited resources available.

If the shifts in age and disease structure are to be effectively managed, policy makers must consider and address the following:

- How can health promotion and prevention policies be strengthened, implemented and evaluated to improve the outcomes of the elderly?

- How can the functional capabilities and quality of life of the elderly be improved?

- What will be the role of Primary Health Care in improving/maintaining the health of this cohort?

- How can health services be better delivered to reduce the direct and indirect costs imposed by this growing population?

Overall

The WHO (2002) encourages member countries to adopt both national and regional policies to address the needs of the elderly; these include policies addressing the economic and social security of the elderly, and their access to comprehensive primary health care services. Additionally, the dissemination of up-to-date information is highly encouraged, so that public awareness may be built and support garnered for positive policy changes for this group.

If neglected and poorly prepared for, the demographic and epidemiologic transitions will pose significant problems to the development and improved economic situation of the country, and the region as a whole; as such policy change and implementation must be undertaken aggressively and urgently.

1.10 Study Goals and Objectives

Cognizant of the preparation of a 'National Policy for the Elderly' by various stakeholders throughout the country, this study has the primary goal of providing recommendations towards the development of a PHC policy for the elderly in Jamaica. This task will be accomplished through:

i)   A review of national and international elder and PHC policies and frameworks

ii)   Use of Systematic Reviews and Randomized Controlled Trials on PHC and elder health related areas

iii)   Use of knowledge generated from two manuscript-style papers

The following content outlines the flow of information, and chapter goals found throughout the document.

Chapter 1: Literature Review and Introduction

Chapter 2: The epidemiological profile of the elderly in Jamaica (Manuscript 1)

The major goal of this chapter is to quantify the major health challenges faced by the elderly in Jamaica. This chapter is meant to provide not only quantifiable evidence to support PHC policy decisions targeting elder health, but is also meant as an epidemiological profile that can stand on its own and inform various entities in care and protecting the elderly. The major objectives of this chapter are as follows:

1. To produce a health profile of the over 60 population, broken down by age (young-, medium- and old-old) and gender. The health profile will cover:

    •   Chronic diseases

    •   Functional ability

- Cognitive impairment

- Depression

- Sensory impairment

- Falls

2. To compare changes where possible, between the health profile of the elderly in the current (2012) and previous (1989) elder surveys

3. To better frame the health situation of the elderly in Jamaica by comparing key health statistics with other LAC and developed countries

4. To provide actionable evidence on the health status of the elderly in Jamaica that may inform public discourse and the crafting of national, elder policies

Chapter 3: Elder access and utilization of health services in Jamaica (Manuscript 2)

The trajectory of declining health as age increases is not inevitable, and may be greatly modified by disease prevention, early intervention, and continuity of care as offered through access and utilization of PHC services. To reap this benefit, a clear understanding of the access and utilization patterns that exist amongst the elderly must be available to policy makers, program managers and health staff. As such, this paper seeks to fulfill the following objectives:

1. To identify elder trends in accessing health services in Jamaica, including perceptions of affordability, availability and accessibility of services

2. To identify elder trends in utilizing health services, including access to a routine source of care, and frequency of contact with health services and utilization of prescription drugs

3. To quantify the relationships that best predict having 'health insurance' in the Jamaican elderly

4. To provide actionable evidence on health care utilization patterns and barriers to care amongst the Jamaican elderly so as to inform public discourse and the crafting of national policies

Chapter 4: Policy background, and methodology

This chapter will focus on outlining international and national policy frameworks on ageing and primary healthcare (PHC) that will be relevant in crafting strong elder-friendly PHC policies. These frameworks in conjunction with the health profile (i.e. chapter 2), and access/utilization profile (i.e. chapter 3) of the Jamaican elderly will be used as building blocks to develop policy recommendations. As a means of increasing the strength of the recommendations, systematic reviews and randomized controlled trials on i) PHC organization and delivery, and ii) chronic disease management, were utilized as appropriate. Finally, Ministry of Health, and expert consultations were also utilized to ensure applicability of policies in the Jamaican setting. Altogether these documents served to ensure the i) political feasibility, ii) applicability, iii) relevance, iv) financial viability, and v) sustainability of the policy recommendations.

To increase likelihood of successful implementation, these documents were utilized within a theoretical framework (Matland's Conflict-Ambiguity Matrix) that addressed stakeholder conflict, and policy ambiguity as a means of improving policy implementation.

Chapter 5: Elder sensitive policy recommendations for PHC

The absence of a PHC policy document specific to the needs of the elderly in Jamaica hinders the ability of policy makers to target resources and interventions to address the distinct issues facing the elderly and to address barriers to their accessing PHC services. Based on the methodology outlined in Chapter 4 the following areas will be targeted for improvement through policy recommendations:

i)   Organization of health services to increase availability of services, reduce waiting time and reduce out-of-pocket costs

ii)   Training of staff and caregivers

iii)   Physical accommodation of facilities

iv)   Pharmaceutical services

v)   Chronic disease management

Recommendations are developed to be practical and applicable in the Jamaican setting, and by extension other developing countries faced with similar constraints. Recommendations are designed for ease of integration into the existing PHC system, with every effort being made to be cognizant of the financial environment within which new policies must survive.

Chapter 6: Conclusion

This final chapter seeks to pull together the findings of chapters two to five, and provide a summary of how these findings will be beneficial in the Jamaican and wider Caribbean region.

CHAPTER 2

EPIDEMIOLOGICAL PROFILE OF THE ELDERLY IN JAMAICA[1]

2.0 Abstract

Jamaica has a burgeoning elderly population that threatens to pose significant difficulties if not properly planned for. Significant information gaps exist in regards to the current health and social status of this population however, thus restricting the development of effective elder policies and interventions. This article aims to provide an epidemiological profile of the Jamaican elderly that may help policy makers better address the specific needs of this population.

Data to inform this health profile was accessed from a nationally representative, two-stage cluster survey of 2,943 elderly persons which was executed in 2011. Analysis of this data included bivariate analysis (with chi square test for homogeneity), and multivariate logistic regression models. Key indicators included sensory impairment; falls; cognitive, mental and functional disability; and chronic diseases. Through the use of one-sample binomial tests, variables were also compared to 1989 elderly survey data to determine trend over time.

Results from this study indicate that women and the over 80 age group are generally at higher risk for the assessed conditions. In terms of 'Activities of Daily Living', the cohort was found to be highly independent (93%), though amongst 'Instrumental Activities of Daily Living' the level of independence was lower at 77%. Dementia and moderate-to-severe depression were fairly prevalent in this cohort, and were reported by 11% and 16% of the cohort respectively. With the exception of arthritis, chronic illnesses showed significant increases compared to 1989 figures; hypertension (61%), diabetes (26%) and arthritis (35%) were most prevalent, and peaked in the middle-old. Amongst impairments, vision had the highest prevalence (33%), with

cataracts and glaucoma being the main contributors. Falls in the last six months were reported by one in five elderly, and this number increased to one in three amongst the over 80 age group.

Based on this profile, it is evident that the health needs of the elderly are quite substantial and in need of significant interventions. Targeted services and policies are therefore needed to address health care gaps that may exist in this group. It is the author's intention that this profile will provide evidence that will be useful to informing and developing policies for the elderly.

Key words: Elderly; Jamaica; Developing country; Health profile; ADL; Epidemiology; chronic disease.

2.1 Aims and Objectives

The major aim of this document is to produce a health profile of the over 60 years population in Jamaica, broken down by the two major non-modifiable determinants of elder health, age and gender. Based on review of the literature and expert consensus, the health profile will be prepared based on the cohort's: i) functional, cognitive, and mental ability; ii) chronic disease burden; and on iii) the prevalence of sensory impairments and falls. These health indicators meet at least one of the following criteria: i) highly prevalent; ii) highly impactful on quality of life; and/or iii) being of great economic significance. The significance of the study lies in the lack of up-to-date information on the health status of the rapidly ageing Jamaican population. This profile does not seek to produce policy recommendations in and of itself, but rather to provide objective data needed to inform public discourse, and to inform policy makers charged with crafting national, elder policies.

2.2 Background

Jamaica is the largest English-speaking country in the Caribbean, and has a population of approximately 2.7 million persons (Pan American Health Organization (PAHO), 2012). The country, categorized by the World Bank as upper middle-income (World Bank, 2011), is currently undergoing both an epidemiological and a demographic transition.

Latin America and Caribbean (LAC) represents the region with the most rapidly ageing population (Eldemire-Shearer, 2008). In fact, at its current growth rate, LAC will possess a 'substantial' proportion of elderly persons (i.e. 15%) in about 40% of the time it took the United States of America (USA) to do the same (Palloni, Pinto & Pelaez, 2002). Projections for LAC population size by 2030 indicate the elderly population will increase by 150% -250% over figures from 2000 (Palloni & McEniry, 2006). Within LAC, Jamaica is classified as being in 'full demographic transition' (CELADE/ECLAC, 2007) and is seeing its elderly population growing at a faster annual rate than its general population. This growth rate is expected to increase the current proportion of elderly persons from 11% to 24% by 2050. (Eldemire-Shearer, 2008) The demographic transition is evidenced by the median population age increasing from 17 years in 1970, to 27 years in 2011, and projections of an increase to 39.0 years by the year 2050 (Eldemire Shearer, 2008; Statistical Institute of Jamaica (Statistical Institute of Jamaica (STATIN), 2011).

LAC has a unique blend of properties which makes its ageing process distinct and less predictable than that of developed countries (Palloni & McEniry, 2006). Such properties include: i) the rapid rate of ageing; ii) the vast disparity between the speed of ageing and improvements in standards of living; iii) institutional fragility/volatility due to

political and economic forces; and iv) the poorly defined health status of the elderly (Palloni & McEniry, 2006). Additionally, the rapidly changing family structure adds to the unique course of ageing in LAC. These factors limit the ability for LAC countries to widely adopt international best practices and policies on ageing.

The health status of the elderly is poorly defined in LAC due to many competing causes and due to the dynamic financial and political environment of the region. The poorly defined health status of the LAC elderly is of significance due to several major reasons. The first being that in cohorts who turned 60 years old after 1990, gains in life expectancy are proposed to be primarily due to improvements in medical care (50-70%), with much less gains being due to improvements in knowledge and standards of living (Palloni & Wyrick, 1981). This phenomenon is predicted to cause higher rates of frailty and disability within the LAC elderly as compared to other nations. Ageing policies must therefore consider the validity of this hypothesis if effective ageing policies are to be implemented.

Secondly, a clearly defined health status of the elderly is important due the increased complexity of a high chronic disease burden in conjunction with lingering/resurging infectious diseases such as dengue, HIV/AIDS, tuberculosis and leptospirosis. Thirdly, the poorly defined effect on elder health of a very dynamic political, social and economic climate in LAC makes the need for a health profile quite urgent. Specifically, the effect of the changing family structure in Jamaica (since independence in 1960) on health status and health needs is important for policy planners. Eldemire-Shearer (2012b) points to increased urbanization and the subsequent migration of younger persons to these urban centers for school and employment, as major

contributing factors. The role of adult children being caregivers for elderly family members, and serving as the 'old age pension' of their parents is becoming increasingly complicated and unlikely as the nuclear family becomes the norm. This effect on health outcomes must be assessed and planned for.

Finally, the elderly represents a highly heterogeneous population with an over 40 year age span between the youngest and oldest members, and with widely varying levels of functional and cognitive ability. Additionally, the over 60 age group is highly feminized and does not reflect the gender ratio of the general population. This age heterogeneity and population feminization indicates that 'blanket' policies should be replaced by data-driven age and gender specific policies.

Region and country specific surveys will be key in providing much needed evidence to define the unique health status of the elderly in the region. This evidence may be used to make and adopt effective elder policies, and to reduce the exorbitant costs associated with poorly managed ageing processes. In Jamaica, the only nationally representative survey of the elderly was undertaken in 1989. During the 20 years since the last survey, the population has continued to grow, chronic diseases have increased in prevalence, and the social and economic determinants of health such as income, security and education have fluctuated. In 2011, a much needed second nationally representative survey of the elderly was undertaken by the original investigator. The survey aimed to document the "prevailing situation, the new challenges and needs, the unaddressed gaps, and emergent issues" that this cohort has experienced since the first survey (Eldemire-Shearer, 2011). Data from this survey, in conjunction with data from 1989 will help to elucidate the current health needs and the changing health trends of the Jamaican elderly.

This article proposes to use data from the 2012 elderly project to develop an age and gender sensitive epidemiological profile of the Jamaican elderly, addressing key components of elder health. These include i) cognitive, mental and functional capabilities; ii) prevalence of key non-communicable diseases (NCDs); iii) vision, hearing and physical impairments; and iv) falls.

2.2.1 Functional, cognitive and mental health disability

Functional and cognitive abilities are important measures of whether the elderly can live on their own and whether additional public resources are needed to deliver services at home and/or in residential facilities. Activities of Daily Living (ADLs) are extensively used to assess functionality in the elderly or chronically ill, and refer to routine self-care activities that allow for self-sufficiency and independence amongst a population. ADLs include personal care, bladder and bowel continence, and the ability to feed oneself. Dependence in these activities may possibly point to low physical functionality (especially in the lower limbs), impairment due to chronic illnesses, and cognitive and affective disabilities (Wary & Lynch, 1998). ADL dependence is a direct risk factor for depression and falls, and an indirect risk factor for premature mortality and morbidity (Stuck et al., 1999). Instrumental Activities of Daily Living (IADLs) on the other hand, assesses one's ability to make decisions and be integrated in community life e.g. being able to manage personal finances and to use transportation (WHO, 2001). IADL dependence may indicate reduced ability to live without support in the community.

The prevalence of cognitive impairment is also important for policy makers; it includes both a mild impairment phase (pre-dementia), and a severe phase of full dementia. Mild cognitive impairment (MCI) is thought of as a prodromal phase where patients are at an increased risk of converting to full dementia (especially Alzheimer's Disease) (Panza, 2006); this makes the MCI group important in predicting future dementia burden. Unfortunately MCI is widely missed in developing countries, due to perceptions of cognitive decline being a normal part of ageing and not a medical condition (Patel & Prince, 2001; Shaji, 2002).

Depression in the elderly is an important predictor of increased ADL disability, cognitive decline, morbidity, and mortality (suicide and non-suicide related deaths) (Palsson, 1997; National Alliance on Mental Health (NAMI), 2009). Depression symptoms present differently in the elderly as compared to the general population and is frequently misdiagnosed as dementia, arthritis and even stroke (NAMI, 2009; Barua, 2011). Additional missed opportunities for the management of depression is also experienced when depressed elderly make contact with health services but have their symptoms dismissed as being a normal part of ageing (Barua, 2011). Studies in the US found that amongst the elderly who commit suicide, 20% visited a doctor the same day they died, 40% the week they died, and 70% the month they died (NAMI, 2009). This points to the importance of understanding the depression trend within the elderly and carefully crafting primary health care (PHC) interventions to help them.

2.2.2 Non communicable diseases (NCDs)

Chronic diseases are associated with increasing age, and consequently with the elderly. NCD increases the risk of functional disability; increased individual costs; increased risk of depression and social isolation; lost productivity in the formal and informal labor force; lost tax revenues; and lowered returns on human investments (Nikolic, 2011). Individuals with a chronic illness have a greater likelihood of having other chronic conditions concomitantly, leading to additional complexities in elder management. Comorbidities are associated with a higher risk of functional and health status decline (Fried, 1999); increased risks of falling; and increased long term care needs.

2.2.3 *Hearing, vision and physical impairment*

Impairments in hearing, vision and physical ability are relevant to the health profile as they may increase elder dependence on mechanical devices and/or human assistance when undertaking activities of daily living (ADL). Vision and hearing impairments have been document by Laforge et al (1992) to significantly increase the risk of functional decline in the elderly, with hearing being assessed as the weaker risk factor. Vision and hearing disabilities reduce the individual's ability to accurately perceive their environments, thus increasing the risk of falling. These impairments along with the fear of falling, work in concert to greatly restrict mobility (Viljanen, 2012), and induce social isolation in this cohort; this reduces the elderly's ability to live independently. Additionally, poor vision has been found to be associated with depression, and social isolation (Bookwala, 2011), both of which reduce elder quality of life and may increase suicidal ideation.

2.2.4   Falls

Falls and their sequelae are one of the 'giants of geriatric medicine' (Miller, 2000). They occur in over 1 in 3 elderly persons in the USA annually (Hausdorff, 2001), with approximately 20-30% of these falls resulting in moderate to severe injury (Alexander, 1992) that reduces quality of life e.g. hip fracture (Sattin, 1992; Tinetti, 2003). Falls in the elderly are associated with increased functional decline in performing both ADLs (e.g. bathing oneself) and IADLs (e.g. preparing ones meals). These disabilities lower elderly independence, increases social isolation and the risk for depression, and significantly increases risk of early mortality, many times resulting in premature entry into residential facilities (Tinetti, 2003; Tinetti, 1998).

This epidemiological profile of the Jamaican elderly has the major objective of providing up-to-date, health evidence to guide the decisions of policy makers. This data is beneficial based on: i) its timeliness and relevance as the elderly population rapidly expands, and the family structure changes; ii) the increased effectiveness and efficiency that will be gained through informed resource allocation; iii) its ability to inform the development of actionable policies based on specific elder needs; iv) its fulfillment of key requirements of the 'Madrid Plan of Action' (to which Jamaica is a signatory); and finally, v) it fulfills the WHO's (2002) prompt for dissemination of up-to-date information so that public awareness may be built, and support garnered for positive policy change.

2.3 Methodology

2.3.1 Background

A cross sectional, nationally representative survey of 2,943 elderly persons was undertaken in 2012 in four (4) of the fourteen parishes within which the island is divided. The major aim of the survey was to document the health and social changes that have taken place in the Jamaican elderly since the last national survey of this cohort in 1989 (Eldemire, 1993).

2.3.2 Study population

The study population included a representative sample of males and females, 60 years of age and over, living in the parishes of St Catherine; Kingston and St. Andrew; and St Thomas. Together these four parishes are representative of the national population (based on age, gender and geographic distribution), and are assessed to consist of constituent elements needed to contrast the health and social status of the elderly. Together these parishes comprise approximately 47% (1,223,792 persons) of the national population.

2.3.3 Sampling strategy

A two-stage cluster sampling methodology was used to recruit persons into the survey, with the first and second cluster units being enumeration districts and households respectively. An enumeration district is a geographical area within a parish, to be enumerated by a single enumerator, and consists of up to 400 dwellings. The sampling strategy was designed in accordance with the cluster selection principles of the Statistical Institute of Jamaica (STATIN), the 'WHO common cluster survey sampling principles', and through use of the 'C-Survey' software (WHO, n.d. ; UCLA, n.d.; Eldemire-Shearer,

2011). The 'C Survey' software was specifically designed by University of Indonesia and UCLA faculty to facilitate 2-stage cluster samples (i.e. rapid surveys) in developing countries (UCLA, n.d.; Eldemire-Shearer, 2011).

Based on the STATIN/WHO principles, and the significant variations in size of enumeration districts, a 'probability proportional to size' (PPS) sampling strategy was undertaken (WHO, n.d.). Under this strategy, larger districts had a higher likelihood of being included in the sample than did smaller districts. To ensure that all persons within the wider sampling frame had the same probability for selection into the survey, the PPS strategy required an equal number of participants to be selected in each of the clusters, irrespective of the cluster size.

The 'C-survey' software, which uses the PPS sampling strategy, was used to determine the overall survey sample size, the size of the clusters and in selecting the enumeration districts/clusters for inclusion in the survey.

Based on the software requirements, the input variables were as follows:

Attribute proportion	0.69
Number of Clusters	35
Design Effect	2
One-half length of Confidence Interval	0.0250
Confidence Level	95%

'Attribute proportion' was assigned a value of 0.69, after using hypertension as the relevant 'attribute' to be measured. Based on national surveys, the proportion of this attribute in the elderly population is estimated to be 69% (Wilks et al, 2007). Since this study is considering the health profile of the elderly, the chronic condition with the

highest prevalence within the Jamaican elderly i.e. hypertension, was assessed to be the most appropriate value to utilize in sample size calculations. *'Number of clusters'* to be included in the survey was pre-defined by the WHO principles to be a minimum of 25. To increase the rigor of the survey an additional 10 enumeration districts/clusters were included making the total number of clusters equal to 35. Calculations of sample size are based on assumptions of a simple random sampling methodology. Use of a cluster sampling approach therefore requires incorporation of a *'Design effect'* (DE) adjustment. This adjustment serves to compensate for the loss of effectiveness experienced from not using simple random sampling.

Based on these parameters, C-Survey indicated a minimum required sample size of 2,660 with each cluster having 76 participants. The minimum requirements were adhered to, and exceeded in the data collection phase, with approximately 85 persons per cluster and 3,000 in the total survey.

Survey instrument

Both qualitative and quantitative methodologies were included in the data collection phase (see appendix for data collection tools). These included:

- 'Main questionnaire'

- Screening tool for cognitive ability (Mini-Mental State Exam)

- Screening tool for Functional Independence (Katz scale)

- Self-rated depression screening tool (Zung's self-rated depression scale)

- Focus group discussions

- In-depth interviews

- Laboratory testing (e.g. fasting blood sugar, cholesterol and calcium tests)

Based on availability of data and the objectives of this document, the main questionnaire and the three screening tools will be used for analysis. The 'main questionnaire' was a structured, pre-coded, paper-based questionnaire which included 200 questions on community and social relationships, socioeconomic factors, lifestyle behaviors, health status and access/utilization behaviors. The "Mini Mental State Exam' (Folstein et al, 1975), uses questions in 11 categories to assess the cognitive ability of persons; categories include ability to read, write, repetition, and place and time orientation. The 'Katz Index of Independence in Activities of Daily living' (Katz et al, 1970) was used to measure the independence of persons in carrying out six activities of daily living (ADLs); these are bathing, dressing, toileting, transferring, continence and feeding one's self. The 'Zung self-rated depression scale' (Zung et al, 1965) uses 20 questions related to mood, hope for the future, perceptions of self-health, and perceptions of usefulness, to assess depression in patients.

2.3.4 Data collection

Data was collected by trained interviewers, who visited all houses within a cluster until 76 qualified participants were identified and included in the study. A geographical grid of each cluster to be surveyed was developed by researchers, and based on randomly selected grid coordinates a starting point for interviews was identified. The interviewers administered the instrument on a face-to-face basis between May 2012 and December 2012. In the event that an eligible participant was identified but was incapable of responding to questions due to their health status, a knowledgeable household member was interviewed. A response rate of approximately 95% was estimated for the survey.

2.3.5 Data management and analysis

STATA version 11 (StataCorp, College Station, TX) was used to analyze data for this article. Survey data measuring five key aspects of health was analyzed and used to develop a health profile of the elderly in Jamaica. This data was compared where feasible, to the 1989 elderly survey in Jamaica; to other countries with 'closely related cultural pools'; and with the developed country in closest proximity to Jamaica, the USA. The four measures analyzed include:

1.   Demographic and socioeconomic factors

2.   Impairments (visual, hearing and physical) and falls

3.   Functional, cognitive, and depression status

4.   Chronic disease status, and comorbidity

With the exceptions of 'functional ability', 'cognitive impairment' and 'depression', all variables were maintained as only binary (yes/no) variables.

Functional ability was dichotomized into a binary variable but was assessed as either dependent or independent. A score of six was used to indicate full independence in patients, while a score of less-than-six represents some dependence on human and/or mechanical assistance. The scores of the "Mini Mental State Exam' ranged from 0-30 points; based on analysis needs cognitive impairment was manipulated as either a 3-point categorical variable (normal, mild and severe) or as a binary variable (none-mild and severe impairment).

Scores of 24-30 points were considered normal cognitive status, while mild impairment was 18-23 points, and severe impairment 17- 0 points. The scores of the Zung Indexed Scale ranged from 25-100 points. On this scale depression was categorized as none (25-50 points), mild (50-59 points), moderate (60-69 points) and severe (70-100 points).

Data analysis, including measures of prevalence for the above variables, were reported by gender and age group i.e. the young-old (60-69 years), medium-old (70-79 years), and the old-old ($\geq$80 years). The 'Chi-square test for association' was used to determine significant differences between genders and age groups for these variables, with an alpha of 0.05 being used as the cut off for significance.

Logistic regression was used to determine the age- and sex- adjusted odds ratios for highly prevalent chronic conditions (hypertension, diabetes, and arthritis), and for major sources of impairment (glaucoma and cataracts). For these regression models, age and sex were used as independent variables, while the condition being analyzed was treated as the dependent variable. Additionally, age- and sex-adjusted logistic regression models were used to determine the strength of the relationship between i) functional impairment, ii) cognitive impairment, iii) mental impairment and iv) comorbidity status. Dummy variables were included in the models to allow the stratum-specific ORs of the categorical variables (cognitive impairment and mental impairment) to be determined. Adjusted odds ratios and 95% confidence intervals were reported from each model.

A one-sample binomial test was used to determine statistically significant differences between current disease prevalence and the prevalence of disease in the 1989 study. Using the current dataset, the binomial test was undertaken for each chronic

disease variable, with the 'null value'/comparison group being the corresponding 1989 figure. This test was used due on the chronic diseases variables being coded as binary (yes/no), and due to this test allowing the investigator to determine what values the sample will be compared to.

2.4 Results

2.4.1 Socio-demographic data

Table 2.1 summarizes the demographic profile of the study cohort. The mean age of the cohort was 72.2 ± 8.9 years, with a range of 60 to 103 years of age. The young-old (60-69 years) represented 44.2% of the population, the medium-old (70-79 year) 33.8% and the old-old (80 years and older) 22.0%. The cohort consisted of 52% women, who on average were older than men. The medium-old and the old-old were 26% (95% CI 1.06-1.49;) and 49% (95% CI 1.23-1.8) more likely to be female when compared to the young-old. The demographic profile of this sample is in keeping with the 2012 Census; this along with the rigorous methodology of this study allows the results of this study to be nationally representative.

Almost six percent (5.7%) of the cohort had no formal education, while 72.0% reported primary school as their ultimate source of education. Women reported significantly higher levels of education, with 2.3% more men reporting no formal education (6.9% versus 4.6%; p<.000). Compared to those with no formal education, those who attended primary school and those who attended university were significantly more likely to be women (p=.00).

Significant gender differences were seen in union status (p=.000); women were less likely than men to be engaged in a long term union (26.1% versus 49.0%; p<.001), and were more likely to have lost a spouse than men (30.2% versus 15.4%; p<.001).Women also reported a comparatively greater religious affiliation (94.3% versus 77.7%; p<.001).

Table 2.1: Demographic Profile of the Elderly Study Cohort, Jamaica

Variable	Sex		Total % (N=2,943)
	Female, % (n=1,531)	Male, % (n=1,412)	
Age Groups (years)			
60 – 69	40.71	48.04	44.23
70 – 79	34.85	32.62	33.78
≥80	24.44	19.34	21.99
Total	*100*	*100*	*100*
Parish of Residence			
Kingston	2.68	.85	1.8
St. Andrew	52.68	41.15	47.14
St. Thomas	7.78	7.01	7.41
St. Catherine	36.86	50.99	43.64
Total	*100*	*100*	*100*
Highest Education			
None	4.55	6.91	5.68
Primary	73.48	70.37	71.99
Secondary	11.9	12.9	12.4
Vocational/technical	3.83	5.5	4.62
University	6.2	4.3	5.3
Total	*100*	*100*	*100*
Religion			
Christian			
Other Religion	77.47	64.36	71.20
None	16.78	13.32	15.12
Total	5.75	22.32	13.68
	100	*100*	*100*
Union Status			
Single	38.10	27.22	32.88
Married/ common law	26.1	49.04	37.1
Widowed	30.23	15.35	23.09
Divorced or separated	5.51	8.18	6.79
Total	*100*	*100*	*100*

2.4.2 Functional, Cognitive, and Mental Ability

Functional Ability

Within the cohort 92.7% reported functional independence, with the remaining 7.3% reporting some dependence on human and/or mechanical assistance (Table 2.2). A significant inverse relationship between age and functional ability exists, with functional ability decreasing as age increases. The young-, medium- and old- old had a prevalence of functional dependence of 2.6%, 6.5% and 18.4% respectively. Significant differences were also identified between genders, with women being more likely to be dependent than men (9.1% versus 5.4%; p<.001). Sex-specific age categories indicated that women 80 years and older, followed by men 80 years and older had the highest prevalence of functional dependency (22.8% and 12.4% respectively).

Functional Ability: ADLs

Dependence in executing ADLs indicates a reduced ability to live alone; these include but are not limited to activities such as being able to bathe and dress oneself ('personal care'), bladder incontinence, and the ability to feed one's self.

The study cohort reported a disability prevalence of 5.8% for personal care, 4.8% incontinence, and 2.6% feeding oneself (Table 2.3). The prevalence of dependence in each of the three assessed ADLs increased significantly with age, with the highest prevalence of each being in the old-old.

Table 2.2: Proportion of Elderly with Functional, Cognitive or Mental Disability

Age	Functional Ability (%)			Cognitive ability (%)				Mental health/depression (%)				
	(N)	Dependent	Independent	(N)	Normal	Mild	Severe	(N)	Normal	Mild	Moderate	Severe
Women												
60-69	607	*2.97	*97.0	584	*57.4	*37.2	*5.5	511	*57.0	*26.6	*12.9	*3.5
70-79	522	*6.70	*93.3	500	*48.2	*41.2	*10.6	433	*53.8	*25.4	*15.9	*4.9
≥ 80	369	*22.76	*77.2	343	*29.5	*42.0	*28.6	288	*41.0	*27.8	*22.9	*8.3
Men												
60-69	668	*2.25	*97.8	641	*63.3	*31.7	*5.0	589	*74.2	*19.2	*5.9	*0.7
70-79	450	*6.22	*93.8	433	*52.0	*38.8	*9.2	385	*65.2	*24.2	*7.5	*3.1
≥80	267	*12.36	*87.6	261	*32.6	*48.3	*19.2	222	*49.1	*30.6	*14.8	*5.4
Total Women	1,511	*9.07	*90.9	1,436	*47.4	*39.7	*12.9	1,241	*52.1	*26.4	*16.4	*5.1
Total Men	1,396	*5.44	*94.6	1,346	*53.6	*37.3	*9.1	1,205	*66.7	*22.9	*8.1	*2.3
Total	2,907	7.3	92.7	2,782	50.43	38.53	11.04	2,446	59.3	24.7	12.3	3.7

* Functional, cognitive and mental ability were all significantly different between age groups, and also between genders (all significant at p=.000)

Women had a significantly higher disability prevalence for 'personal care' (7.8%
versus 3.6%; p<.001) and 'bladder incontinence' (5.7% versus 3.8%; p<.02), when
compared to men. 'Feeding' however, was not determined to be significantly different
between genders (2.9% versus 2.0%; p>.05) (Table 2.3). Sex-specific age categories
indicated that the highest functional disability prevalence for each of the three ADLs was
in old-old women.

Of importance to note is that Simpson's paradox appears to be present in
assessing 'personal care' disability. Overall only 5.8% of the population reported this
disability, however it was reported in 15% of the old-old compared to only 5.1% of the
medium-old and 1.9% of the young-old. Sex-specific age estimates showed an even
greater variation as 20.3% of old-old women reported this disability compared to only
8.1% of old-old men (Table 2.3).

Table 2.3: Proportion of Elderly with Specific ADL and IADL Disabilities

Age (years)	ADLs % (n)			IADLs % (n)		
	Personal care	Incontinence	Feeding	Prepare meals	Shopping	Transportation
Women						
60-69	*2.1 (13)	*2.8 (17)	*0.7 (4)	*7.1 (44)	*10.7 (66)	*7.3 (45)
70-79	*6.2 (32)	*5.5 (29)	*3.0 (16)	*14.0 (74)	*23.2 (122)	*18.0 (95)
≥ 80	*20.3 (69)	*11.1 (41)	*6.5 (24)	*45.6 (167)	*59.2 (216)	*49.5 (183)
Men						
60-69	*1.6 (11)	*1.8 (12)	*1.0 (7)	*7.3 (49)	*8.9 (60)	*5.7 (38)
70-79	*3.8 (17)	*4.6 (21)	*2.0 (9)	*19.9 (91)	*21.3 (97)	*13.6 (62)
≥80	*8.1 (21)	*7.4 (20)	*4.5 (12)	*39.9 (108)	*43.9 (119)	*31.1 (84)
Total Women	*7.8(116)	§5.7 (87)	2.9 (44)	18.9 (285)	*26.8 (404)	*21.3 (323)
Total Men	* 3.5 (49)	§3.8 (53)	2.0 (28)	17.7(248)	*19.7(276)	*13.1(184)
TOTAL	**5.8 (165)**	**4.8 (141)**	**2.6 (75)**	**18.3 (537)**	**23.4 (687)**	**17.4 (511)**

*Significant difference between age groups, or between genders as is applicable (p<.000)
§ Significant difference between genders (p<.01)

Functional Ability: IADLs

Dependence in undertaking IADLs may signify inability to function effectively in one's community; this may be assessed by the ability to undertake routine shopping, preparation of meals and the use of public transport. Table 2.3 shows a reported 23.4% dependence in 'routine shopping', 18.3% in 'preparing meals', and 17.4% in using 'public transportation'.

Significant age differences existed for IADLs; disabilities increased significantly with increasing age, with the old-old having the highest prevalence of each of the three disabilities i.e. shopping (59.2%), meals (45.6%), and transport (49.5%). Significant gender differences also existed, with women being more likely to be dependent in 'routine shopping' (26.8% versus 19.7%; p<.001) and 'transport' (49.46 versus 31.11; p<.001). Interestingly, the preparation of meals was not found to be significantly different by gender. Old-old women reported the highest prevalence of both ADL and IADL functional disabilities when compared to all other age and/or sex categories (Table 2.3).

Cognitive ability

Cognitive ability was assessed by the 'mini-mental state exam' (MMSE) screening tool. This tool found the cohort to be 50.4% normal, 38.5% mildly impaired, and 11.04% severely impaired (Table 2.2).

A positive, significant relationship was found between cognitive ability and increasing age. As age increased, the proportion of persons with normal cognitive ability decreased, while the proportion of persons with mild and with severe impairment increased (p<.001). Amongst the young-old, over 60% of the cohort was normal, while in the medium-old approximately 50% was normal, and only about 30% was normal in the

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old-old. In relation to gender, women had a significantly higher prevalence of poor cognitive health than did men; women had a lower prevalence of normal function (47.4% versus 53.6%; p<.001) and had a higher rate of severe impairment (12.9% versus 9.1%; p<.001).

Severe cognitive impairment was identified in 11% of the cohort. Amongst the young-old, 5.2% had severe cognitive impairment, while 10% of the medium-old and 24.5% of the old-old had this degree of impairment. Amongst all severely impaired persons, the highest proportion belonged to the old-old (48.5%), while the smallest proportion was found in the young-old (21%). In terms of sex-specific age breakdown, old-old women had the highest prevalence of severe impairment followed by old-old men (28.6% and 19.2% respectively; p<.001).

Mental Health/Depression

Table 2.2 indicated that 59.3% of the cohort had no depression, 24.7% mild depression, 12.3% moderate depression, and 3.7% severe depression. There was a statistical significant difference in depression between the various age categories. Generally as age increased, the trend showed an increase in depression; the old-old therefore had the lowest proportion of 'normal' mental health and had the highest proportion of severe depression. Even with depression being highest in the old-old, the majority of this age group still had 'normal to mild depression (73.5%).

Women were more likely to be depressed than men; women were less likely to have normal function (52.1% versus 66.7%; p<.001) and more likely to have severe depression (5.1% versus 2.3%; p<.001). In terms of sex-specific age breakdown, old-old women had the highest prevalence of severe depression followed by old-old men (8.3% and 5.4% respectively).

2.4.3 Chronic Diseases

Nine chronic diseases were documented in the study questionnaire; these conditions represent the most prevalent and/or most influential on elder quality of life and mortality. Of the nine assessed chronic diseases, 76.4% of the elderly had at least one chronic condition/illness, while over 47.5% of the population had comorbidity (Table 2.4). Women were more likely to have a chronic disease than men (OR 3.50, 95% CI 2.9-4.22). When compared to the young-old, the middle-old (OR 2.0, 95% CI 1.68-2.54) were more likely to report a chronic disease, while the old-old (OR 1.66, 95% CI 1.32-2.08) were more likely to report disease.

Table 2.5 shows that high blood pressure (61.4%), arthritis (35.0%), and diabetes (26.2%) were most highly reported conditions amongst the elderly. For each of these three conditions, there proved to be a statistically significant difference between genders, and also between age groups.

Table 2.4: Number of Chronic Diseases by Sex

Condition	Women % (n)	Men % (n)	Total % (n)
0 Chronic Disease	13.27 (203)	34.80 (490)	*23.59 (693)*
1 Chronic Disease	25.75 (394)	32.39 (456)	*28.93 (850)*
2 Chronic Diseases	34.18 (523)	19.90 (280)	*27.33 (803)*
3 Chronic diseases	19.87 (304)	9.23 (130)	*14.77 (434)*

Hypertension

Hypertension was reported by 61.4% of the cohort; and the condition was reported by significantly more women (72.5%) than men (49.2%) (Table 2.5). This was supported by evidence that after adjusting for age, women were more likely to report hypertension than men (OR 2.71, 95% CI 2.32-3.16) (Table 2.6). In terms of age, there was a significant relationship between hypertension and age after adjusting for sex. When compared to the young-old, the medium-old (OR 1.74, 95% CI 1.50-2.13) and the old-old (OR 1.35, 95% CI 1.11-1.66) were more likely to report this condition.

Arthritis

Arthritis was reported by 35% of the cohort; the condition was disproportionately reported by women (48.4%) as compared to men (20.5%) (p<.001) (Table 2.5). In fact there was a 264% increased odds of arthritis amongst women, even after adjusting for age (OR 3.64; 95% CI 3.06-4.32) (Table 2.6). In terms of age, there was a significant difference in arthritis prevalence between age groups, after adjusting for sex. When compared to the young-old, the medium-old (OR 1.62, 95% CI 1.35 – 1.96) and the old-old (OR 1.79, 95% CI 1.45-2.20) had increased odds of arthritis.

Diabetes

Diabetes was reported by 26.2% of the cohort; and the condition was disproportionately reported by women (32.3%) as compared to men (19.6%) (p<.001) (Table 2.5). After adjusting for age, women (OR 1.96; 95% CI 1.63-2.30) were more likely to report diabetes compared to men (Table 2.6).

Table 2.5: Chronic Disease Prevalence by Age and Gender

Condition	Male (%)				Female (%)				TOTAL % (n)
	60-69	70-79	≥80	*Total*	60-69	70-79	≥80	*Total*	
*High Blood Pressure	41.1	57.8	54.6	**49.2**	69.6	77.5	70.8	**72.5**	*61.35 (1,800)*
*Coronary Heart Disease	3.0	3.8	4.4	**3.5**	6.1	7.8	8.8	**7.3**	*5.46 (159)*
*Stroke	4.4	11.3	6.6	**7.1**	8.0	9.7	10.9	**9.2**	*8.19 (239)*
*Heart failure	.9	1.3	1.5	**1.1**	2.3	1.3	3.02	**2.1**	*1.65 (48)*
⨕ Asthma	5.1	6.43	7.43	**6.0**	10.0	4.6	7.2	**7.3**	*6.70 (195)*
*Diabetes	16.5	24.7	19.6	**19.6**	31.8	34.1	31.3	**32.3**	*26.22 (767)*
*Arthritis	14.2	22.4	32.8	**20.5**	42.9	54.2	49.9	**48.4**	*34.98 (1,022)*
*Seizures	1.2	2.4	1.5	**1.6**	1.8	0.6	1.6	**1.3**	*1.48 (43)*
*Cancer	4.7	9.3	10.0	**7.2**	2.3	3.0	3.6	**3.0**	*5.02 (146)*

⨕ Significant difference between age groups, at p<.05
* Significant difference between age groups, and also between genders (p<.05)
 Question asked: "Has a doctor ever told you that you have…?"

In regards to age, there was a significant difference in diabetes prevalence between age groups after adjusting for sex. In fact, the middle-old (OR 1.31, 95% CI 1.09-1.59) had an increased odds of hypertension compared to the reference group (young-old). The old-old were not significantly different from the reference group however (OR 1.07; 95% CI .86-1.34).

Table 2.6: Adjusted Odds Ratios for Chronic Disease Prevalence

	Age/Sex Adjusted Odds Ratio (95% CI)		
	HTN	Arthritis	Diabetes
60-69	1.00	1.00	1.00
70-79	*1.74 (1.50- 2.13)	*1.62 (1.35- 1.96)	*1.31 (1.09 – 1.59)
>80	*1.35 (1.11-1.66)	*1.79 (1.45- 2.20)	1.07 (.86- 1.34)
Male	1.00	1.00	1.00
Female	* 2.71 (2.32- 3.16)	*3.58 (3.03-4.23)	*1.94 (1.63- 2.30)

* Significant difference between genders, or between age groups (at $p<.01$)

Other chronic conditions

Stroke (8.19%), coronary heart disease (CHD) (5.46%), and cancer (5.02%) represented chronic conditions of lowest disease burden. In terms of age, there was a positive, significant relationship between age and reported stroke and reported cancer. No significant differences in asthma and CHD prevalence were found between age groups. Women had a higher prevalence of stroke (9.2% versus 7.1%; $p<.04$) and CHD (7.3% versus 3.5%; $p<.001$) as compared to men. An inverse gender relationship held true for cancer, where women reported a lower prevalence of cancer (3.0% versus 7.2%; $p<.001$). Asthma showed no significant differences between genders (7.4% versus 6.0%; $p<.16$).

Comorbidity

Comorbidity is the concurrent presence of more than one chronic disease in an individual; this condition was reported in 47% of the study cohort (Table 2.7). Comorbidity was found to be statistically different between genders and age groups. Generally, women had higher rates of comorbidity than did men (60% versus 32% respectively; p<.001); in fact women (OR 3.18, 95% CI 2.72-3.71) were more likely to report co-morbidity than men. As compared to the young-old, the middle-old (OR 1.83, 95% CI 1.55-2.18) were most likely to have comorbidity, followed by the old-old (OR 1.171, 95% CI 1.41-2.08).

Hypertension/ Diabetes

Based on the high prevalence, and the mortality and morbidity implications of hypertension (HTN) and diabetes (DM), these two conditions were analyzed together (Table 2.7). Hypertension and diabetes were both reported in approximately 22% of the study cohort, with women being more likely to have both conditions than men (28.2% versus 15.1%; p<.001). When compared to the reference group (young-old), the medium-old (OR 2.00, 95% CI 1.58-2.51) were most likely to have both HTN and DM, followed by the old-old (OR 1.48, 95% CI 1.13-1.92). Almost 66% of the cohort reported having at least one of these two conditions (77% of women and 54% of men).

Table 2.7: Chronic Disease Comorbidity by Sex

Condition	Women % (n)	Men % (n)	Total % (n)
Co-morbidity (>1 NCD)	60.35 (924)	32.37 (457)	*46.92 (1,381)*
HTN + Diabetes	28.19 (431)	15.09 (212)	*21.92 (643)*
HTN and/or Diabetes	76.46 (1,169)	53.74 (755)	*65.58 (1,924)*

Chronic disease trend over time

Using the one sample binomial test, the values of key conditions were compared to values reported from the 1989 Survey. Table 2.8 indicates that the prevalence of key chronic diseases have significantly increased since the last national survey in 1989, at a highly significant level. The greatest increases in chronic conditions were experienced in diabetes (157%), cancer (118%), and stroke (55%). Between the two major sources of visual impairment, the more significant increase was identified in glaucoma (137%), as compared to cataracts (35.3%). Arthritis and hearing impairment were the only two conditions that significantly decreased over the last 20 years.

Table 2.8: Change in Chronic Disease Prevalence Over Time

Condition	2012 (%)	1989 (%)	% Change	P value
Chronic conditions				
High Blood Pressure	61.35	43.4	41.36*	.00000
Stroke	8.19	5.3	54.53*	.00000
Arthritis	34.98	39.8	(-12.11)*	.00000
Diabetes	26.22	10.2	157.06*	.00000
Cancer	5.02	2.3	118.27*	.00000
Impairment				
Glaucoma	11.61	4.9	136.9*	.00000
Cataracts	21.78	16.1	35.3*	.00000
Hearing	8.7	12.8	(-5.8)*	.00000

* Prevalence of all conditions were significantly different over time (at $p<.000$).

 (-x) decreased prevalence compared to 1989

2.4.4 Vision, hearing and physical impairment

Based on Table 2.9, 8.7% of the study cohort reported having a hearing impairment, 32.3% a visual impairment, and 7.5% a physical impairment. Within this cohort 61% of the population reported no impairment, while 39% reported having one or more impairment. Approximately 1.47% of the cohort reported all three.

Hearing, vision and physical impairment were all significantly different by age, and exhibited a positive, linear relationship; the old-old consequently had the highest prevalence of each impairment.

Table 2.9: Proportion of Elderly with Specific Impairments/Conditions

	Hearing % (n)	Vision % (n)	Physical % (n)	Falls % (n)
Women				
60-69	*4.2 (26)	*32.3 (198)	*4.9 (30)	*21.9 (135)
70-79	*10.2 (54)	*36.1 (190)	*6.5 (34)	*26.7 (141)
≥ 80	*17.4 (64)	*44.2 (163)	*17.4 (63)	*29.8 (110)
Men				
60-69	*4.0 (27)	*20.3 (136)	*5.1 (34)	*13.2 (88)
70-79	*7.3 (33)	*32.3 (147)	*6.2 (28)	*20.2 (92)
≥80	*18.6 (50)	*37.3 (100)	*10.8 (29)	*24.0 (65)
Total Women	9.5 (144)	*36.7 (558)	8.4 (127)	*25.5 (389)
Total Men	7.8 (110)	*27.5 (386)	6.5 (91)	*17.5 (246)
Total	**8.7 (254)**	**32.3 (944)**	**7.5(218)**	**21.7 (635)**

*Significant difference between age groups, or between genders (at p<.001)
 Question asked: "Do you have disability? a) Hearing impaired b) Visually impaired, c) Physical disability"

In terms of gender, significantly more women reported having any of the three impairments than did men (43.6% versus 34.0%; p<.001). Specifically however, vision was the only impairment that showed a clear difference between genders; women reported a 9% higher prevalence of visual disability (36% versus 27%; p<.001).

Physical disability had a p-value very close to the predetermined cut off (p =.052); this in addition to women having a 60% higher prevalence than men may prompt the conservative analyst to conclude a significance difference between genders.

Visual Impairment: Cataracts and Glaucoma

Within the elderly cohort 21.8% reported ever having cataracts, 11.6% reported ever having glaucoma, and 24% reported ever having both. Amongst those specifically reporting a visual impairment, 35.0% reported cataracts, while 22.3% reported glaucoma.

Interestingly, 32% of persons with cataracts reported also having diabetes, while 71% reported also having hypertension. The trend was similar for persons with glaucoma, as 16.4% reported also having diabetes, while 69.2% reported also having hypertension. Women had a significantly higher prevalence of cataracts than did men (25.7% versus 17.4%; p<.001), however no gender differences were identified in glaucoma (12.5% versus 10.7%; p>.05) (Table 2.9). This relationship is supported by Table 2.10, which indicated that women (OR 1.55, 95% CI 1.29-1.86) were more likely to have cataracts after adjusting for age, while in glaucoma no gender differences were found (OR=1.11; 95% CI 0.88-1.40).

Both cataracts and glaucoma showed significant differences by age, with the old-old having the highest prevalence of both conditions. Table 2.10 shows that the middle-old and the old-old after adjusting for sex, had a 135% (OR 2.35, 95% CI 1.89-2.94) and a 271% (OR 3.71, 95% CI 2.93- 4.67) increased odds of having cataracts compared to the reference group. Glaucoma showed similar results. Women 80 years and older had the highest prevalence of both glaucoma (20.8%) and cataracts (40.7 %), amongst all age groups and genders.

Table 2.10: Age/Sex Adjusted Odds Ratios for Glaucoma and Cataracts

	Cataract aOR (95% CI)	Glaucoma aOR (95% CI)
60-69	1.00	1.00
70-79	*2.35 (1.89- 2.94)	*2.06 (1.55- 2.75)
>80	*3.71 (2.93-4.67)	*3.27 (2.44- 4.39)
Male	1.00	1.00
Female	*1.55 (1.29- 1.86)	1.11 (.88-1.40)

* Significant difference between age groups, or between genders (at p<.001)

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2.4.5 Falls

Table 2.9 indicates that 21.7% of the cohort reported a fall within the last 6 months. The prevalence of falling was significantly different between age groups, and showed a positive trend with age. Compared to the young-old, the old-old (OR 1.80, 95% CI 1.42-2.24) had the highest odds of falling, followed by the middle-old (OR 1.48, 95% CI 1.20-1.81).

In terms of gender, 25.5% of women and 17.5% of men reported falling in the last 6 months (p<.001). Based on sex-specific age categories, women who are 80 years and over had the highest prevalence (29.8%) of falling in the last 6 months (Table 2.9). Of the over 600 persons who fell in the last 6 months, 89% were functionally independent. Alternately, when analyzed within functional groups, the dependent cohort had a greater prevalence of falling (31%) compared to the independent cohort which had 21% of its cohort fall in last 6 months. In fact after adjusting for age and gender, the functionally dependent (OR 1.42, 95% CI 1.03-1.95) had on average a higher likelihood of having fallen in the last six months compared to those that are independent.

Restriction of activities due to fear of falling

Restriction of activities is an indicator of reduced quality of life amongst the elderly. The fear of falling may result in reduced independence, community interaction and social cohesiveness. In terms of community-based activities, 34.57% of the study cohort limited their activities due to a fear of falling. A higher proportion of women limited their physical activity due to the fear of falling compared to men (41.43% versus 27%; p<.001).

Compared to the youngest old (reference group) the medium-old (OR 1.35, 95% CI 1.1-1.6; p=.0016) and the old-old (OR 2.00, 95% CI 1.62- 2.5; p=.000) had increased odds of restricting their activities due to the fear of falling.

Location of falls

Amongst those who fell, 54.3% of respondents indicated that they fell in the home, while 36.4% occurred while they were 'out' and 9.3% occurring in both places. Women were more likely to fall at home compared to falling while 'out' (59.2% versus 32.1%); males showed a similar trend with more men falling at home than while 'out' (47.5% versus 42.5%).

2.4.6 Key relationships

Table 2.11 shows the strength of the relationship between key variables addressed in this health profile after adjusting for age and gender. The direction of the relationships was based on a review of literature. These variables include cognitive impairment, depression, functional disability and comorbidity. The categorical variables being assessed were dichotomized into two distinct arms. Cognitive function was dichotomized into 'severe impairment' and 'mild to no impairment', while depression was dichotomized into 'moderate to severe depression' and 'mild to no depression'. Functional disability and comorbidity retained their original dichotomous format.

Table 2.11 indicates that having a fall is significantly associated with depression, functional disability and comorbidity after adjusting for age and gender. No significant association was found with cognitive impairment.

The strongest association with falling is depression; the likely relationship is that falling increases the likelihood of depression by over 100%. The relationship with comorbidity is likely to be in the opposite direction, with comorbidity (and increased numbers of prescribed drugs) increasing the odds for falls by over 40%.

Comorbidity was found to be significantly associated with having moderate/severe depression and having a functional disability. In fact after adjustment, individuals with comorbidities were more likely to have moderate/severe depression (OR 1.60, 95% CI 1.27-2.03), and were more likely to have a functional disability (OR 1.90, 95% CI 1.40-2.61). Comorbidity was not found to be significantly associated with cognitive impairment.

Functional disability was significantly associated with cognitive impairment and depression (Table 2.11). Individuals with functional disabilities were highly likely to report severe cognitive impairment (OR 4.70, 95% CI 3.37-6.67), and moderate/severe depression (OR 3.35, 95% CI 2.33-4.79). Cognitive impairment had a strong association with depression, with severe cognitive impairment increasing the odds of depression by over 110% (95% CI 1.55-2.88) (Table 2.11).

Table 2.12 illustrates the relationships between key health status variables, and the most prevalent chronic diseases after adjusting for age and gender. From this table it is evident that diabetes increased the risk for all assessed health indicators by 35% or more. Hypertension on the other hand, which is sometimes called the silent killer, did not significantly increase the odds of neither depression nor functional ability, though it did increase the risk for falling by over 50%. Arthritis showed a significant relationship with having depression and for increased falls.

Table 2.11: Age and Gender Adjusted OR for Relationships Between Major Health Status Variables

	Cognitive Impairment OR (95% CI)	Depression OR (95% CI)	Falls OR (95% CI)	Co-morbidity OR (95% CI)	Functional disability OR (95% CI)
Cognitive Impairment	-	*2.12 (1.55-2.88)	1.16 (.88-1.55)	1.14 (.88 -1.47)	*4.74 (3.37-6.67)
Depression	*2.12 (1.55-2.88)	-	*2.09 (1.64-2.67)	*1.61 (1.27-2.03)	*3.35 (2.33- 4.79)
Falls	1.16 (.88-1.55)	*2.09 (1.64-2.67)	-	*1.66 (1.38-2.00)	*1.42 (1.03-1.95)
Comorbidity	1.14 (.88 -1.47)	*1.61 (1.27-2.03)	*1.66 (1.38-2.00)	-	*1.91 (1.40-2.61)
Functional disability	*4.74 (3.37-6.67)	*3.35 (2.33- 4.79)	*1.42 (1.03-1.95)	*1.91 (1.40-2.61)	-

*Significant relationship at $p<.001$.   (All variables used in their binary form)

Table 2.12: Age and Gender Adjusted OR for Chronic Disease Relationships

	Hypertension OR (95% CI)	Diabetes OR (95% CI)	Arthritis OR (95% CI)
Cognitive Impairment	.75 (.58-.97)*	1.37 (1.05-1.78)*	.93 (.71-1.21)
Depression	1.25 (.97-1.59)	1.46 (1.15-1.84)*	1.43 (1.13-1.81)*
Functional disability	1.08 (.78-1.47)	1.57 (1.16-2.13)*	.77 (.56-1.04)
Falls	1.52(2.26-3.08)*	1.35 (1.62-2.9)*	1.34(1.11-1.63)*

* Significant relationship at $p<.001$

2.5 Discussion

This section will address study findings and discuss the likely accuracy of these data. The data will be compared where possible to LAC countries and to developed countries to get a better idea of where Jamaica stands in the scope of things. The study cohort consisted of 2,943 elderly persons with the largest age group being the young-old (44%); the gender profile consisted of 52% women and 48% men. Women reported higher rates of education, and were more likely than men to be widowed or single. The study population was representative of the national elderly profile with no statistically significant differences between the gender and age distributions of both populations.

Functional ability, cognitive impairment and mental health

On average, functional independence was high in the cohort with only 7.3% of the elderly requiring some mechanical device or some human assistance in at least one ADL. This figure is expected within the Jamaican elderly where most elderly persons remain very active long after they turn 60 years old, many times playing significant roles in the family structure and working in the informal sector. The average proportion of persons reporting ADL dependency in the LAC cities of the SABE study is 20% (Palloni & McEniry, 2006), while Spain reported 34.6% (Millan-Calenti, 2009) and Sweden reported 32% dependence (Aguero-Torres,1998; Von Strauss, 2003). The major source of ADL discrepancy between the Spanish and Jamaican studies is in regards to incontinence, where Jamaicans reported comparatively very low incontinence levels (4.8% versus 29%). These figures indicate the Jamaican elderly are either more likely to be functionally independent than the elderly in other countries (even in LAC), or that they are more tolerant of their limitations (Eldemire, 1993).

Increasing age and gender were identified in this study as risk factors for functional dependence, with old-old women reporting the highest prevalence of dependence at 23%, followed by old-old men who reported 12% dependence. Again, this trend is not surprising as rural men especially continue to work and support their families well after the age of 60. All three international studies reported increasing dependence with age (especially in the old-old), and females having greater dependence compared to men; this reinforces the trend identified in the Jamaican cohort.

Within the Jamaican context, the ADL that poses the greatest concern for policy makers is that of personal care (dressing and bathing). For this ADL, old-old women are 150% more likely to report dependence than old-old men, thus potentially pointing to the need for at home personal care services targeting the old-old (especially women).

As may be expected, the prevalence of IADL dependence was much higher than that of ADLs, as they require 'greater physical integrity' and 'higher cognitive ability' (Beland & Zunzunegui, 1999). In this population roughly 20% of the population reported dependence in preparing their own meals, shopping, and using transportation. The SABE study reported 29% dependence in at least one IADL, while the Spanish study showed 53.5% dependence. Age was a significant risk factor for IADL dependency with the old-old having the highest prevalence (between 30-50%). Women were more likely to report dependence in being able to do routine shopping and to use transportation, while both genders had equal dependency in preparing their own meals.

It is possible to postulate that the rates of dependence in Jamaican men may be due to cultural norms that did not require the learning of this skill in youth, and as such dependence in this area may not be a phenomenon significantly due to ageing. Women on the other hand may lose interest in these activities as the family structure changes, and their care-giver roles diminish.

Overall, functional independence was found to be highly associated with cognitive ability, depression, falls and comorbidities (Table 2.11). This is not surprising as these factors are widely supported in the literature as affecting functionality. Cognitive ability was found in this study to have the strongest relationship with functionality amongst the variables assessed (OR=4.7). This is supported by Augerro-Torres (1998), who found that cognitive ability as assessed by the MMSE is the single greatest risk factor for functional and health declines amongst the elderly within a three year period.

Cognitive Impairment

Cognitive ability was assessed as severely impaired in 11% of the population, with almost 40% being 'pre-demented'. Rates of both cognitive states were higher in women, and increased with age; old-old women had a prevalence of over 10% more than old-old men. The MMSE has been widely used in the Jamaican population to assess cognitive state. The current study however has shown much higher rates of impairment than previously executed studies. Neita et al (2013) for example found only 14% of the population having impairment. This significant difference between the two studies is of concern to investigators and will require additional surveys to validate/explain these differences.

Dementia is widely documented as an important source of strain on care-providers (Prince, 2007) who are many times themselves old and suffering from their own impairments. Figures for mild and severe cognitive impairment indicate the growing need for institutional care within this cohort and for geriatrics- trained home care providers for the oldest-old. Gender specific training will also be required to address the needs and cultural sensitivities of elderly females within this cohort. These services will be especially crucial as the almost 40% with mild cognitive impairment (i.e. the prodromal period of Alzheimer's) represent a large cohort of pre-demented patients who have a high risk for converting into severe dementia (Panza, 2006). This large risk pool for potential dementia also causes increased concern about availability of services, considering the strong relationship between dementia and declines in both functional ability and depression.

Depression

Within the cohort, 16% had moderate to severe depression, with women and the old-old being the groups with the highest burden. Reported depression in women is more than twice that in men. This is in line with Wilks et al (2009) which found a higher prevalence of depressive symptoms in Jamaican women, with 10% having ever considered suicide. Based on the Jamaican data, comorbidities are postulated to be a risk factor for depression, and depression in turn acts as a risk factor for falls, functional disability and cognitive impairment (Table 2.9). The relationships between depression and cognitive impairment, and depression and functional disabilities are hypothesized to be bi-directional i.e. cause and effect (Newman, 1998). This bi-directionality may result in a debilitating cyclic effect, with increased mortality and morbidity in this group. These

findings are in line with international literature, and point to the importance of strong mental health services amongst the elderly (especially the chronically and co-morbidly ill), as they are at high risk for depression and its complications.

Non Communicable Diseases

NCD burden was identified amongst three major diseases/conditions; hypertension (61%), diabetes (26%) and arthritis (35%). Gender and age are identified risk factors for these conditions. Hypertension, diabetes and stroke on average had the highest prevalence amongst the medium-old, and not the old-old. This data is supported by Jamaica health and lifestyle (JA Style) survey which identified a similar trend in the elderly for hypertension and diabetes (Wilks, 2008). This trend may be due to persons dying from severe forms of these conditions before they reach 80 years, thus leaving the remaining old-old being individuals who are comparatively healthier.

After adjusting for age, women had between 95% and 260% increased likelihood of various NCDs. Such large discrepancies may be an artifact of a comparatively low utilization of routine health services amongst men, thus reducing their diagnosis of these conditions. This is reflected in the study data which showed a significantly higher proportion of men having no routine source of care (62% versus 37.6%; p<.001). The focus group discussions held in conjunction with the survey also identified this construct within the elderly male population. Men were reported as not trusting health providers and preferring to use natural herbs and remedies to address their symptoms. Men complained of the long wait times to see the physician and expressed the belief that such health seeking activities were not a priority. Wilks et al (2008) support this finding and report that in the general Jamaican population, 45% of men self-medicated, compared to

34% of women. In addition to the lower utilization of health services, women may report higher rates of disease due to the widely accepted notion that though women survive longer than men, they tend to have greater morbidity.

Cancer was the only chronic disease reported that was more prevalent in men. Amongst the 114 specific types of cancer reported 84% was due to prostate cancer. This finding is in keeping with the very high incidence of prostate cancer (especially symptomatic cancers) in the Jamaican and Caribbean populations. In fact, the Caribbean has the highest age-standardized prostate cancer mortality in the world, at 26.3 per 100,000 population per year (Jemal, 2011); Jamaica's age-standardized rate is alarmingly three times higher at 78.1 per 100,000 per year (Gibson, 2010). This makes prostate cancer the most prevalent cancer amongst men, with the risk increasing significantly with age (Aiken & Eldemire-Shearer, 2012).

Between 1989 and 2011 chronic diseases increased significantly, with the largest increases occurring in diabetes (157%) and cancer (118%) prevalence; hypertension showed a 41% increase during this period. The comparatively higher increases in diabetes and cancer may be due to the lower baseline prevalence in 1989 i.e. 10% and 2.3% respectively. Hypertension prevalence on the other hand was already fairly high in 1989 (43%), thus a relatively smaller increase of 41% would still result in it being the chronic disease with the highest prevalence. Arthritis is the only chronic disease to show a decrease (-12%) during this period, but again, the already high baseline figures of arthritis have resulted in this condition being one of the top three chronic diseases in the elderly.

In terms of diabetes prevalence in Jamaica (26%), the rates are higher than that reported from the SABE study in LAC, and also from the NHIS amongst the elderly US population. The LAC average was 9% lower than Jamaica, while the NHIS was almost 6% lower. NHIS data indicates a 5% lower prevalence of hypertension compared to the 61% reported in the Jamaican elderly. Arthritis prevalence (35%) on the other hand, is much lower in Jamaica as compared to the LAC average (42%) and the NHIS survey (50%). This may potentially be supported by arguments of high ADL functionality amongst the Jamaican cohort. The cancer rate in Jamaica (5%) was only 1% higher than the LAC average, but almost 20% lower than reports from the US.

The general trend of increasing chronic diseases highlights the importance of addressing the chronic disease epidemic, especially in the burgeoning elderly population. This will require significant input from PHC, which may facilitate effective prevention, management and rehabilitative services within this cohort. These services may reduce the associated complications of chronic diseases such as loss of sensory abilities, falls, depression and premature mortality. 'Age-friendly' primary health care that seeks to increase accessibility and acceptability of PHC for the elderly must be made universally available in all PHC faculties island wide, if this epidemic is to be curbed.

Chronic diseases tend to cluster together, so persons with one NCD are likely to have other comorbidities. 'Comorbidity' was reported in 47% of the population and similar to chronic disease status, women had the highest rates of comorbidity, and the middle-old had the greatest burden. One in five elderly persons had both HTN and DM, while almost 7 in 10 persons had at least one of these two conditions. Comorbidities are associated with rapid reductions in health status and increases in functional decline.

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Consequently, it is associated with increased likelihood of functional disability (84%), depression (59%) and falls (66%), and the complications that go with these conditions (Table 2.9). Healthy lifestyle programs that promote a life course approach will be important in reducing and preventing the development of chronic illnesses and comorbidities, and thus prevent the numerous harmful effects of these conditions.

Additionally, persons with comorbidities (which are almost half of the elderly) must be carefully followed up by health staff to detect depression and reduced functionality that may further increase the risk of falls, suicide, premature death and premature institutionalization.

Impairments

Thirty-nine percent of the cohort reported having either a vision, hearing or physical disability. Poor vision (32%) was by far the most prevalent of these impairments, being roughly 4 times more prevalent than either hearing (8.7%) or physical impairment (7.5%). Compared to 1989 figures, the prevalence of hearing disabilities has decreased significantly, though no new interventions were introduced in the population. It is interesting to note however, that when hearing was assessed by the interviewer, 5.35% were assessed as having poor hearing, while 22.5% were assessed as having moderate-poor hearing. The prevalence of moderate-poor hearing is more in line with the prevalence amongst Medicare respondents in the NHIS study, 2011.

The high sensory deprivation (1 in 10 hearing impaired, and 1 in 3 vision impaired) found in the Jamaican elderly may reduce their ability to accurately assess and maneuver within their environments, thus potentially increasing falls, and the restriction of activities within this cohort. In fact, late-age visual impairment has been found to be

associated with depression, reduced ADL and IADL functionality and social isolation (Bookwala, 2011; Laforge, 1992). Impairments of this nature must be addressed as a matter of importance within the elderly, as Laforge et al (1992) reports that after adjusting for sex, age and cognitive ability, persons with no functional disability except a visual impairment reported a 150% higher likelihood of functional decline, while those who reported both a vision and hearing impairment had a 250% increased likelihood of progressing to impairment.

Amongst persons with a visual disability, 1 in 5 persons reported glaucoma which represents a 137% increase over 1989 figures, and 1 in 3 reported cataracts which is a 35% increase. Additionally, persons with each of these conditions reported a high prevalence of both diabetes and hypertension; known risk factors for the conditions. In fact, Stein et al found that persons with diabetes alone had a 35% increased risk of glaucoma, while those with hypertension had a 17% increased risk (Stein, 2011). This implies two things, i) that the increase in visual impairment may be indirectly related to the increase in chronic diseases in this population, and ii) that the negative impact of vision loss on the health of the elderly may be reduced if chronic illnesses are prevented or better managed. Corrective surgery and prescription medications must also be included in policies targeting these impairments.

Falls

One in five (1 in 5) persons reported falling in the last six months, with women being more likely to fall than men. Reports of falling increased dramatically with age, with women over 80 being the group with the highest risk (1 in 3). Additionally most persons (63.6%) reported having fallen at home. McDonald et al (2001), Williams-

Johnson et al (2004) and James et al (2007) support findings that the majority of falls within the Jamaican elderly occur within the home. This points to the lack of awareness and education in regards to creating age-friendly environments in the home, thus exposing the elderly to unnecessary risks in what should be their safest environment.

The prevalence of falls in Jamaica is alarming as international reports indicate that 20-30% of falls result in moderate to severe injury; this will increase the rates of dependency and frailty in the elderly and will consequently increase their risk of premature death (Hausdorff, 2001), and direct and indirect health costs. In fact, US reports indicate that 90% of hip injuries in this age group are due to falls, with 25% of these persons dying within six months of having such a fracture (Fuller, 2000). One Jamaican study found a more favorable outcome for fallen elderly, with only 48% reporting lower body injury, and 62% requiring surgical interventions (James, 2007). This potentially points to comparatively better outcomes for the Jamaican elderly who have experienced a fall. This may be in line with the reports of 93% functional independence in this cohort.

In addition to the functional decline caused by injury from the fall, the 'fear of falling' now becomes an important factor to consider. This fear to engage in activities may significantly affect important social networks that are needed by the elderly, and may also result in untimely muscle atrophy, and loss of agility and balance (Laird, 2005). The prevalence of falls in Jamaica is worrying as it is significantly higher than figures reported from other populations. The Medicare Current Beneficiaries Survey (USA) for example reports 1 in 5 falls *annually*, instead of every six months. Closer investigations are needed to determine why the prevalence is comparatively so high, and measures put in place to decrease incidence.

Using routine PHC visits to avert risk factors for falls may mitigate the potential impact amongst the elderly. This should include the 'Age Friendly Clinical Tool Guide', so as to screen for the risk of falling, and subsequently implement an action plan to avert such events (MAWC, 2011).

Within this study, increasing age, gender, depression (OR= 2.09), functional disability (OR=1.42) and comorbidity (OR= 1.66) of chronic diseases (and by proxy, multiple prescribed drugs) were found to be associated with falling. Literature on elder falling supports these findings, indicating that common risk factors for elder falling include 'increasing age', recent discharge from hospital, flares of acute or chronic illnesses, depression, impaired cognitive ability, vision and balance problems, reduced muscle strength, and the use of four or more prescriptions (Tinetti, 2003; Lawyor, 2003; Fuller, 2000). Notably, hypertension (37%), heart disease (76%), diabetes (21.7%) and dementia (7.6%) have been identified amongst fallen elderly in Jamaica (Williams-Johnson, 2004; James, 2007). The 2012 elderly survey found that the three major chronic illnesses, hypertension, diabetes and arthritis all increased the likelihood of falling between 35-52%. This reinforces the need for well controlled chronic diseases amongst the population. Falling in this cohort did not show a significant association between falling and cognitive impairment in the Jamaican elderly however. PHC is perfectly positioned to mitigate many of the risk factors associated with falling. The PHC team must work as a multidisciplinary team in order to reduce the 1 in 5 falls that occur every 6 months, and specifically the 1 in 3 falls that occur in women over 80. To provide effective preventive and rehabilitative care to reduce mal-outcomes, Physical Therapists and community-level workers must be engaged as key players in the PHC team.

2.6 Conclusion

The health needs of the elderly Jamaican population are significant, with women and the old-old being the groups at highest risk for morbidity. (Table 2.13) The prevalence of chronic diseases is especially high, with 76% of respondents having a chronic disease and almost 50% having comorbidities. Hypertension and diabetes were the major chronic illnesses reported, with the prevalence of these conditions having increased significantly over 1989 figures.

Hearing, vision, and physical impairment were also high in this cohort, with almost 40% reporting at least one of these complications. The prevalence of falling (22%) is very high in this cohort, with this risk being especially high in the home environment. Cognitive impairment screening tool indicated 11% of the cohort as being severely impaired and almost 40% being 'pre-dementia'; these figures are believed to possibly be elevated due to the screening tool used, thus warranting further investigations. Depression was moderately high in this cohort with approximately 16% reporting moderate to severe depression.

Though morbidity is high in this population, full independence as assessed by ADLs remains very high (93%); this possibly indicates an active lifestyle or higher tolerance for functional disability. Many of the morbidity variables showed a strong relationship with each other, with the strongest being the relationship between functionality and cognitive impairment; and functionality and depression.

2.7 Limitations

The Mini Mental State Exam (MMSE) has previously been used in the Jamaican population to assess cognitive impairment. The current study has however shown much higher rates of impairment than previous studies. On closer examination, it was revealed that three questions (attention and calculation; word recall; and drawing) had low reported scores. For these questions roughly 50% of respondents received the lowest two possible scores. The 'attention and calculation' question was particularly worrying, as it is believed this question performed poorly due to the intricate calculation requirements to answer (i.e. counting backwards from 100 in increments of seven). Considering the high illiteracy rates in this population, this question may be reflecting their academic ability rather than their cognitive ability. This question should have been modified as in other studies, to include a non-academic alternative, such as asking the person to spell the word 'WORLD' backwards. Based on concerns from this study, the cognitive function of the elderly needs to be validated/investigated using other screening/confirmatory tools.

Another limitation of this study in Jamaica is that enquiries into net income is highly sensitive, and may therefore provide unreliable estimates. As such, types of income received were documented but not the 'value' of these incomes. This proved to be an obstacle in comparing and adjusting variables for 'socio-economic status'.

2.8 References

Alexander, B., Rivara, F., & Wolf, M. (1992). Hospitalization for fall-related injuries in
    older adults. *American Journal of Public Health*, 82, 1020-1023.

Aguero-Torres, H., Fratiglioni, L., Guo, Z., Viitanen, M., Von Strauss, E., & Winblad, B.
    (1998). Dementia is the major cause of functional dependence in the Elderly: 3-

year follow-up data from a population-based study. American Journal of Public

Health, 88(10), 1452-1456.

Aiken, W., & Eldemire-Shearer, D. (2012). Prostate cancer in Jamaica and the wider

Caribbean: It is time to consider screening. *West Indian Medical Journal*, 61(1),

90-93.

Barua, A., Ghosh, M., Kar, N., & Basiliod, M. (2011). Prevalence of depressive disorders

in the elderly. *Annals of Saudi Medicine*, 31(6), 620–624.

Beland, F., & Zunzunegui, M. (1999). Predictors of functional status in older people

living at home. *Age and Ageing*, 28(2),153-159.

Bookwala, J., & Lawson, B. (2011). Poor vision, functioning, and depressive symptoms:

A test of the Activity Restriction Model. Retrieved from

http://gerontologist.oxfordjournals.org/content/early/2011/07/06/geront.gnr051

Eldemire D. (1993). An epidemiological study of the Jamaican Elderly. A Thesis

submitted in fulfillment of the requirement of the Doctor of Philosophy in Public

Health, Department of Social and Preventive Medicine, Mona, University of the

West Indies.

Eldemire–Shearer, D. (2008). Ageing: The response yesterday, today and tomorrow. *The*

West Indian Medical Journal, 57(6), 577-588.

Eldemire-Shearer, D., James, K., Nevins, D., Laws, H., Morris, C., & Willie, D. (2011).

Project proposal: Study of older persons in Jamaica, 2011. Department of

Community Health and Psychiatry, University of the West Indies, Mona

Jamaica.

Eldemire–Shearer, D. (2012b). New age challenges. *The Gleaner*. Retrieved from

    http://jamaica-gleaner.com/gleaner/20121209/news/news94.html

Folstein, M., Folstein, S., & McHugh, P. (1975). Mini Mental State: A practical method

    for grading the cognitive state of patients for the clincan. *Journal of Psychiatry*,

    12, 189-198.

Fuller, G. (2000). Falls in the elderly. *American Family Physician, 61(7), 2159-2168.*

Gibson, T., Hanchard, B., Waugh, N., & McNaughton. D. (2010). Age-specific incidence

    of cancer in Kingston and St Andrew, Jamaica, 2003 – 2007. *West Indian Medical*

    Journal, 59(5) 456-464.

Hausdorff, J., Rios, D., & Edelberg, H. (2001). Gait variability and fall risk in

    community-living older adults: a 1-year prospective study. *Archives of Physical*

    Medicine and Rehabilitation, 82, 1050-1056.

Haynes, R., McDonald, H., & Garg, A. (2002). Helping patients follow prescribed

    treatment: Clinical applications. J*ournal of American Medical Association,*

    288(22), 2880-2883.

James, K., Eldemire-Shearer, D., Gouldbourne, J., & Morris, C. (2007). Falls and fall

    prevention in the elderly: The Jamaican perspective. *West Indian Medical*

    Journal, 56(6) 534-539.

Jemal, A., Bray, F., Center, M., Ferlay, J., Ward, E., & Forman, D. (2011). Global cancer

    statistics. *CA: A Cancer Journal for Clinicians*, 61(2), 69-90.

Katz, S., Downs, T., Cash, H., & Grotz, R. (1970). Progress in development of the Index

    of ADL. *The Gerontologist*, 10 (1), 20-30.

Laforge, R., Spector, W., & Sternberg, J. (1992). The relationship of vision and hearing

impairment to one-year mortality and functional decline. *Journal of Aging and*

Health, 4(1), 126-148.

Latin America and the Caribbean Demographic Center (CELADE), & Economic

Commission for Latin America and the Caribbean (ECLAC). (2007).

Demographic observations number 3: Population estimates and projections.

Retrieved from http://www.eclac.cl/cgi-

bin/getProd.asp?xml=/publicaciones/xml/0/32650/P32650.xml&xsl=/celade/tpl-

i/p9f.xsl&base=/celade/tpl-i/top-bottom.xslt.

Millan-Calenti, J., Tubı´o, J., Pita-Ferna´ndez, S., Gonza´ lez-Abraldes, I., Lorenzo, T.,

… & Maseda, A. (2009). Prevalence of functional disability in activities of daily

living (ADL), instrumental activities of daily living (IADL) and associated

factors, as predictors of morbidity and mortality. *Archives of Gerontology and*

Geriatrics, 50, 306-310.

National Alliance on Mental Illness (NAMI). (2009). Depression in older persons: Fact

sheet. Retrieved from

http://www.nami.org/Template.cfm?Section=Depression&Template=/ContentMa

nagement/ContentDisplay.cfm&ContentID=88876

Neita, S., Abel, W., Eldemire-Shearer, D., James, K., & Gibson, R. (2013). The

prevalence and associated demographic factors of dementia from a cross-sectional

community survey in Kingston, Jamaica. *International Journal of Geriatric*

Psychiatry, DOI: 10.1002/gps.3982.

Nikolic, I., Stanciole, A., & Zaydman, M. (2011). Chronic emergency: Why NCDs matter. Retrieved from http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/ChronicEmergencyWhyNCDsMatter.pdf -term-care-understanding-medicaid-s-role-for-the-elderly-and-disabled-report.pdf.

Palloni, A. & McEniry, M. (2006). Ageing and health status of elderly in Latin America and the Caribbean: Preliminary findings. *Journal of Cross Cultural Gerontology*, 22(3), 263-285.

Palloni, A., Pinto-Aguirre, G., & Pelaez, M. (2002). Demographic and health conditions of ageing in Latin America and the Caribbean. *International Journal of Epidemiology*, 31(4), 762.

Palloni, A., & Wyrick, R. (1981). Mortality decline in Latin America: Changes in the structures of causes of deaths, 1950 – 1975. *Social Biology*, 28(3– 4), 187–216.

Palsson, S., & Skoog, I. (1997). The epidemiology of affective disorders in the elderly: A review. *International Clinical Psychopharmacology,* 12(7), S3-S13.

Panza, F., D'Introno, A., Colacicco, A., Capurso, C., Del Parigi, A., Capurso, S., … & Solfrizzi, V. (2006). Cognitive frailty: Pre-dementia syndrome and vascular risk factors. *Neurobiology of Ageing,* 27(7), 933-940.

Patel, V., & Prince, M. (2001). Ageing and mental health in a developing country: Who cares?Qualitative studies from Goa, India. *Psychological Medicine,* 31(1), 29–38.

Prince, M., Ferri, C., Acosta, D., Albanese, E., Arizaga, R., Dewey, M., … & Uwakwe, R. (2007). The protocols for the 10/66 dementia research group population-based research programme. *BioMedical Central: Public Health*, 7, 165.

Shaji, K., Arun Kishore N., Lal, K., & Prince, M. (2002). Revealing a hidden problem. An evaluation of a community dementia case-finding program from the Indian 10/66 dementia research network. *International Journal of Geriatric Psychiatry, 17*(3), 222–225.

Statistical Institute of Jamaica (STATIN). (2011). *Population and Housing Census 2011: General report, volume 1*. Retrieved from http://www.jis.gov.jm/pdf/General%20Report%20Census%202011%20Revised%20Copy%20Oct.%2019.pdf

Stuck, A., Walter, J., Nikolaous, T., Bula, C., Hohmann, C., & Beck, J. (1999). Risk factors for functional status decline in community living elderly people: A systematic literature review. *Social Science and Medicine*, 48, 445–469.

Tinetti, M. (2003). Preventing falls in elderly persons. *New England Journal of Medicine*, 348, 42-49.

Tinetti, M., & Williams, C. (1998). The effect of falls and fall injuries on functioning in community- dwelling older persons. *Journal of Gerontology Series A: Biological Sciences and Medical Sciences,* 53, M112-M119.

University of California Los Angeles (UCLA) School of Public health. (n.d.). Manual of C-Survey 2.0 software. Retrieved from http://www.ph.ucla.edu/epi/programs/csurvey2_manual.pdf

Viljanen, A., Kulmala, J., Rantakokko, M., Koskenvuo, M., Kaprio, J., & Rantanen, T. (2012). Fear of falling and coexisting sensory difficulties as predictors of mobility decline in older women. Retrieved from

http://biomedgerontology.oxfordjournals.org/content/early/2012/04/30/gerona.gls

134.abstract

Von Strauss, E., Aguero-Torres, H., Kareholt, I., Winblad, B., & Fratiglioni, L. (2003).

Women are more disabled in basic activities of daily living than men only in very

advanced ages: A study on disability, morbidity, and mortality from the

Kungsholmen project. *Journal of Clinical Epidemiology, 56,* 669–677.

Wilks R. (2007). Hypertension in the Jamaican Population. A presentation to the Trinidad

& Tobago National Consultation on Chronic Non-Communicable Diseases,

September 2007. Available at

http://www.health.gov.tt/documentlibrary/downloads/17/ProfRainfordWilks-

JamaicaTT-CNCDs.pps

Wilks, R., Younger, N., Tulloch-Reid, M., McFarlene, S., & Francis, D. (2009). *The*

Jamaica health and lifestyle survey 2007-2008. Retrieved from

http://www.mona.uwi.edu/reports/health/JHLSII_final_may09.pdf

World Heath Organization. (n.d.). Steps in applying probability proportional to size

(PPS) and calculating basic probability weights. Retrieved from

http://www.who.int/tb/advisory_bodies/impact_measurement_taskforce/meetings

/prevalence_survey/psws_probability_prop_size_bierrenbach.pdf

World Health Organization. (2001). Mental Health: New understanding new hope. *The*

World Health Report 2000. Retrieved from

http://www.who.int/whr/2001/en/whr01_en.pdf

World Health Organization. (2002). Active ageing policy framework. Retrieved from

http://whqlibdoc.who.int/hq/2002/who_nmh_nph_02.8.pdf.

Wray, L. & Lynch, J. (1998). The role of cognitive ability in links between disease

    severity and functional ability in middle-aged adults. *Annual Meetings of the*

    Gerontological Society of America.

Zung,W., Richards, C., & Short, M. (1965). Self-rating Depression Scale in an outpatient

    clinic: Further validation of the SDS. *Archives of geriatric Psychiatry*, 13, 508-

    515.

CHAPTER 3

ELDERLY ACCESS AND UTILIZATION OF HEALTH SERVICES[2]

3.0 Abstract

The elderly represent a vulnerable sect within the Jamaican population. This group has considerable health needs, decreased financial independence, and increased social isolation. These characteristics pose significant financial and social implications for both the individual and the wider community, which may be ameliorated by the regular utilization of health services.

Significant data gaps have hindered the development of an access and utilization profile that would aid policy makers in identifying and addressing specific barriers to elderly care. This paper seeks to provide such a profile through use of data from a 2012 nationally representative, two-stage cluster survey of the over 60 age group. Analysis included bivariate and chi square analysis, adjusted odds ratios and a hierarchical, logistic regression model.

Results. Most persons (93%) reported having a routine source of care and annual check-ups (80%), however preventive services were significantly under-utilized especially in the public sector. Services that were most difficult to access were medical care (29%), and prescription drugs (24%). The major barriers to accessing services were: cost (81%), drug availability (23%), waiting time (21%), and transport issues (14%). The payment of user fees in public facilities was reported by almost half of the cohort (43%), with drugs (31%) and doctors fees (26%) being most reported. Low uptake of both health insurance (22.6%) and drug subsidies (35-39%), in addition to heavy private sector utilization, contributed to the high out-of-pocket costs faced by the elderly. The cohort without health insurance was on average poorly educated; never married; worked in the informal labor sector; and reported not having a retirement plan. Interestingly, drug subsidy cards were

more likely to be accessed by those who already had health insurance, as opposed to the high risk-group without insurance. In terms of accessing assisted living devices, few (<10%) respondents reported this need. Roughly 1 in 2 persons requested help however, in accessing glasses and community services (e.g. ambulance and home health care).

Recommendations. Policy planners/implementers should consider the following: i) widespread sensitization in regards to user fee removal, and the availability/value of drug subsidy cards; ii) targeted interventions to improve access to retirement planning services, health insurance, glasses and community health services; and iii) the re-organization of the delivery of primary health care (PHC) and drug services to reduce identified barriers.

3.1 Background

3.1.1 Ageing in Jamaica

In Jamaica, the elderly population is increasing in both absolute and proportional terms (Eldemire-Shearer, 2008). Currently, the elderly represent 300,000 persons or 11% of the general population (Eldemire-Shearer, 2008); this is projected to increase by 150,000 persons by 2025 (UN, n.d.).

The elderly represent a socially vulnerable sect within the general population due to their increased prevalence of chronic illnesses, reduced cognitive, functional and mobile ability, and due to their many times reduced social and financial independence. The Mona Ageing and Wellness Center (2011) stresses the need for special attention to be placed on elder health, highlighting the following as evidence of this need:

i) The clinical picture seen in the elderly may not be the same as in younger populations

ii) Lack of reserve capacities may result in earlier and different presentation of disease and incapacity

iii) Though disease presents earlier, the elderly tend to present at a later stage for health care

iv) All levels of prevention are effective in the elderly, with small interventions producing dramatic impacts on overall health and functional capacity

Based on the health characteristics of this population, improved access to community level primary health care (PHC) services may be an effective and efficient means of reducing morbidity, premature mortality, and associated health costs. In fact, the 'Madrid International Plan of Action' (adopted in 2002 by the World Health Assembly on Ageing), supports 'active ageing' through increased focus on health promotion, preventive services, and equitable access to care (United Nations (UN), 2002b). This approach translates into a focus on strengthening PHC and making it more culture- and gender sensitive, while addressing the age specific needs of the population.

Services associated with PHC are seen as providing the 'regular, continuing contacts and care that older people need to prevent or delay the onset of chronic, often disabling diseases and to enable them to be vital resources to their families, societies and the economy' (UN, 2002b). The WHO (2005) emphasizes that PHC should possess the following characteristics: i) integrated with other areas (e.g. physiotherapy); ii) available; iii) accessible; iv) comprehensive; and v) age and gender responsive. Poor access to such services places an unnecessary burden on individual/community-level human and financial resources, diverts attention from other needy patients, and leads to costly secondary care alternatives (Rust, 2008). Additionally, the economic losses due to poor

PHC management of ambulatory-sensitive conditions such as diabetes and hypertension are likely to be high, and result in more costly secondary care alternatives (Parchman, 1999). The accompanying loss of functional capacity also places additional stresses on both the family, and on available social services.

Inadequacy of information on the access and utilization patterns of the elderly is a major barrier in ensuring that this cohort is provided with accessible, effective, age and gender sensitive PHC.

The consequences of such information gaps may be quite extensive considering the health characteristics of this population, and the costs they place on the health sector. Through the efforts of the 'Elderly Survey' (Eldemire-Shearer, 2011), vast amounts of information have become available, thus allowing the careful documentation of such access and utilization trends.

3.1.2 Access and utilization of health care

Access and utilization of health services (especially PHC), are widely accepted determinants of health, having significant impact on morbidity and mortality rates within populations (WHO, 2000b; Aday & Andersen, 1974). 'Access to care' refers to the ability of persons to enter and negotiate through the health care system as the need for health promotion, maintenance and treatment arises; it is a measure of the 'degree of fit between the clients and the system' (Higgs, 2005). Utilization on the other hand, is an outcome indicator of 'access'; it offers proof as to whether entry into the health system has actually been gained, and whether passage through the system has been facilitated to the point of utilization of services (Aday & Andersen, 1974; Anderson, 1995). Utilization is proof that access exists.

Access, may be measured by 'process indicators' such as: i) affordability; ii) availability; iii) acceptability; and iv) accessibility of services (Aday & Andersen, 1974; Zuvekas & Weinick, 1999). Utilization, on the other hand is the 'outcome indicator' of access and may be measured by i) having a routine source of care; ii) frequency of contact with health services; iii) types of sites where care is accessed; and iv) purpose of care accessed (Aday, 1974).

Access and utilization indicators are important for the understanding of barriers and facilitators of access within a system, and are crucial in the development of effective policies aimed at increasing access for high risk cohorts such as the elderly. Increasing access and utilization of services to this cohort is not always a simple matter however, as access may be compromised at many levels and through a combination of factors (Comino, 2012). Barriers may exist within the health care delivery system and/or within individual patients and health providers, thus blocking the potential benefits of PHC (Rogers, 1997; Andersen, 1995). The major facilitators/barriers to 'access' to be evaluated in this paper are: i) affordability, ii) availability, and iii) accessibility of health services; these will be explored in the following sections.

'Affordability' may act as a major barrier for the elderly to access health care, and is associated with cost of services and with the population's access to health insurance. Lack of health insurance, and by extension 'out-of-pocket' costs are consistent and strong predictors of poor access to health care (Shi & Stevens, 2010; Fitzpatrick, 2004).

Without health insurance, high-risk populations will be less likely to have a regular source of care, thus compromising their health outcomes. Empirical evidence supports this notion, as insurance has been shown to have the greatest impact on health through its role in increasing access to PHC (Lille-Blanton, 2005).

'Availability' of resources such as diagnostic tests, medical services and drugs, is an indicator of the level of access and utilization that patients have to health services (McLaughlin & Wyszewianski, 2002; Penchansky & Thomas, 1981; Eldemire-Shearer, 2009). In fact, availability of staff (such as dieticians, dentists, mental health officers) and resources at the PHC level, have been shown to reduce the risk of hospitalization by 70% in Medicare recipients categorized in fair to poor health (OR 1.70; 95% CI 1.09-2.65) (Parchman, 1999).

'*Accessibility'* of health facilities, as determined by geographic accessibility (i.e. road distance) and the availability/frequency of transport systems, may act as barriers to health care. Distance has been shown to be a significant barrier especially for the elderly, as they tend to have less access to personal or public transport (Nemet & Bailey, 2000; Eldemire-Shearer, 2009). An inverse relationship between transport and utilization has also been identified by Nemet & Bailey (2000), and Comber et al (2011).

In terms of measuring utilization of services amongst the elderly, the highly acclaimed Andersen-Aday behavioral model identifies having a 'regular source of care' (RSC) as a key facilitator for the utilization of health services. In fact, persons with a chronic disease who have a routine health care provider, have lower morbidity and mortality rates as compared to those without chronic diseases (Shi & Stevens, 2010). Having a RSC is associated with continuity of care; receiving timely and adequate medical

care (Chen, 1987; Shi & Stevens, 2010); and with the utilization of preventative services. Sox et al (1998) supports this finding stating that the lack of a routine provider is a strong and consistent determinant of poor health seeking behaviors; poor access; and poor outcomes.

Other than having a RSC, the other common metric to assess utilization is 'frequency of use'. This includes the 'mean number of healthcare visits', types of services accessed, and prescription compliance. 'Mean visits' is generally assessed over a 12-month period, with no utilization of a provider in that period being accepted as a gross indicator of poor access (Weissman, 1993).

An assessment of these facilitators/barriers is particularly relevant within the Jamaican context as the Ministry of Health has implemented aggressive measures over the past decade to increase access to services for all Jamaicans. These measures include the improvement and strengthening of PHC delivery services; the introduction of a publicly funded health insurance scheme for retired persons; and the introduction of health cards that subsidize the cost of prescription drugs. The most aggressive measure to address access to care however is the removal of user fees from the public health sector in 2008. As a result, accessing key services in the public sector should no longer be hindered by cost barriers. How, and in what populations access has changed due to these interventions, and whether other barriers to care have been inadvertently created remains to be seen amongst the elderly. The following sections will further discuss these interventions.

3.1.3 Primary Health Care in Jamaica

The Jamaican health system is built on a strong foundation of PHC, with the island being integral in the development of the Alma Atta declaration on PHC in 1978. Since then, much has been done to build PHC services in Jamaica, with the last few years seeing the government express renewed interested in strengthening and re-building these services.

In this setting, PHC is delivered through a network of health centers ranging from a 'type one' facility which provides minimum serves (e.g. antenatal care), to a 'type five' facility which offers a wide array of services including pharmacy, laboratory, mental and dental services. PHC serves as the first point of contact with the health sector, and from here referrals to and from hospitals are made. In this setting, health centers do not act as strict 'gate keepers' as self-referral to hospitals remains quite common. Physician- and self- referrals between private and public facilities are also common-place, with the treatment of one episode of illness potentially resulting in patients making multiple contacts with both public and private arms (Pan American Health Organization (PAHO), 2012).

3.1.4 Access to health insurance

The National Insurance Gold (NI-Gold) is the major form of health insurance offered by the Government of Jamaica, through the Ministry of Labor and Security. This form of health insurance is provided to pensioners who have worked in the formal labor sector, and is funded through the National Insurance Scheme (NIS). NI-Gold provides limited subsidies towards the cost of doctor's visits, hospital stays, surgeon's fees, and prescription drugs.

The other form of health insurance offered through the government, is the 'Government of Jamaica' (GOJ) health insurance. Government of Jamaica health insurance is provided to persons employed to government services, and represents an employer-employee cost sharing program. It is offered through the private insurance company, Sagicor/Blue-Cross. Upon retirement, the government continues to provide this insurance to its retired employees, taking over at this point the full payment of premiums.

Employment in the formal labor market is required to access both the NI-Gold, and the GOJ insurance schemes, thus rendering both forms of insurance inaccessible by many elderly Jamaicans. This is in keeping with findings that over 95% of insurance coverage in Jamaica is due to private insurance (Wilks, 2009; Planning Institute of Jamaica (PIOJ), 2010).

Access to prescription drug cards

The Government of Jamaica has also implemented two major forms of prescription drug support; these are the 'JADEP' and the 'NHF' drug card. JADEP, the Jamaica Drugs for the Elderly Program, provides 72 prescription drugs for the treatment of 10 chronic diseases, and is available to all persons 60 years and older. Prescription drugs are provided free of charge with this card, though a small dispensing fee ($40JA; $0.40US) is attached to each drug.

Participation in this program is optional for private pharmacies, and in spite of retaining dispensing fees some have opted-out of participating; this is reportedly due to low financial incentives on their end. The National Health Fund (NHF) drug card, contrary to JADEP, subsidizes over 800 drugs for 15 prevalent chronic conditions, with no restriction on age. Upon presentation at any pharmacy, the health card is projected to save

subscribers between 25%-75% on drugs (Goffe & McCartney, 2008). Additional supplies and procedures are also subsidized for diabetics and asthmatics (e.g. sugar test strips, lancet syringes, HbA1C tests, asthmatic spacers) (NHF, 2010).

3.1.5 Access to pharmacy services

In addition to the provision of drug subsidies, access to prescription drugs is also tackled through the use of traditional public pharmacies, and 'extended' public pharmacies called 'Drug Servs'. Public pharmacies are those that accept prescriptions only from public patients, to whom they provide medications free of charge. Drugs provided/sold by government facilities must meet the definition of being vital, essential or necessary, and as such the government drug procurement list is termed a 'VEN list'. Drugs outside of this list are not supplied to government facilities, nor are they provided to patients by public pharmacies. Public patients are therefore required to pay for prescribed drugs that are not found on this list, at Drug Serv or private pharmacies. The VEN list has received criticisms of containing insufficient drugs and for not including widely requested medications. This frustration is further compounded by the complexity and length of time needed to add new drugs to this list.

Drug Servs are government (NHF) operated pharmacies, which provide access to and accepts payment for drugs that are not on the VEN list. Generally, both Drug Serv and private pharmacies accept all forms of health and drug cards, with the major exception being that some private pharmacies have opted out of accepting JADEP drug cards.

3.1.6 Summary

The elderly population is growing at an alarming rate and by 2025 they are expected to represent 24% of the general population. This trend is compounded by elder health being associated with an increased burden in chronic diseases, significantly increased health expenditures, and premature declines in morbidity and mortality. This trajectory is not immutable however, and may be greatly modified by disease prevention, early intervention, and continuity of care, as offered by PHC and related facilities. To reap this benefit, a clear understanding of the access and utilization patterns that exist amongst the elderly must be available to policy makers, program managers and health staff. Such a profile must place a special emphasis on understanding the barriers that restrict utilization in this population. As such, this paper seeks to fulfill the following objectives:

i) To identify elder trends in accessing health services in Jamaica, including perceptions of affordability, availability and accessibility of services.

ii) To identify elder trends in utilizing specific health services

iii) To quantify the relationships that best predict having 'health insurance' in the elderly

iv) To provide actionable evidence that will support the decisions of policy makers

3.2 Methodology

3.2.1 Background

In 2012 a nationally representative survey of 3,000 persons over the age of 60 was undertaken to better understand the current state of the elderly in Jamaica. This survey included not only health related aspects but also the indicators of socio-economic and socio-political living conditions, and community participation of seniors.

3.2.2 Study population

This survey included persons 60 years and older who reside in four (4) parishes in Jamaica. These parishes together represent 47% of the national population; the demographic distribution of the largest parish, St Catherine, reflects the national profile while the parishes of Kingston and St Andrew, and St Thomas represent urban and rural populations respectively.

3.2.3 Sampling strategy

A two-stage cluster sample with a 'probability proportional to size' (PPS) sampling strategy was used to identify participants for the survey. The sampling strategy was based on the '*WHO common cluster survey sampling principles'*, and used the '*C-SURVEY'* software to undertake cluster and sample size calculations (WHO, n.d.; UCLA, n.d. ; Eldemire-Shearer, 2011).

In the two-stage cluster sampling technique, parish enumeration districts and households represented the first- and second-stage cluster units. The PPS strategy allowed enumeration districts with larger population sizes to have a higher probability of being selected for sampling. Once the clusters for inclusion were selected, an **equal** number of participants are included in each cluster (irrespective of size). This sampling strategy ensured that all persons within the study area had the same probability of being sampled irrespective of the enumeration district within which they resided. Based on the PPS strategy, the C-Survey software was used to select the clusters to be included in the study, and to calculate the survey and cluster sample sizes. Input variables for this calculation included the following:

Attribute proportion   0.69

One-half length of Confidence Interval   0.0250

Confidence Level   95%

Number of Clusters   35

Design Effect   2

The 'attribute proportion' used in calculations was determined by the estimated

proportion of hypertension in the Jamaican elderly. Proportion of hypertension was used

to calculate the sample size as the research of Wilks et al. (2007) indicates it is the chronic

condition with the highest prevalence in Jamaica. In keeping with convention, a

Confidence Interval of 95% was used as an input variable. The number of clusters to be

included in the study was based on the '*WHO common cluster survey sampling

principles'.* Based on these guidelines, the pre-determined minimum number of clusters

for this survey was 35; however to ensure representativeness of the survey 35 eligible

enumeration districts were selected for inclusion. The study design effect (DE) was

estimated to be 'low' (i.e. a value of approximately 2), based on similar surveys

previously executed in this population. The design effect of two compensated for the loss

of effectiveness expected from the use of cluster sampling instead of simple random

sampling (SRS). Based on input parameters, the minimum required sample size was

calculated to be 2,660 with the minimum number of persons per cluster being 76. On

completing the survey, approximately 3,000 persons were surveyed with approximately 85

persons belonging to a cluster.

3.2.4 Survey instrument

The survey used both qualitative and quantitative methodologies. These included: a questionnaire; mini-mental state exam; a functional capacity scale; a self-rated depression scale; focus group discussions; and blood work. Focus group discussions and the blood work results were not considered for the purpose of this article. The survey instrument was a structured, pre-coded questionnaire reflecting areas such as community and social relationships, socioeconomic factors, lifestyle behaviors, health status and access/utilization behaviors. It is important to note that while many socioeconomic variables were included in the questionnaire, no direct variable for 'income level' was included in the instrument.

3.2.5 Data collection and analysis

Upon entering a survey cluster, randomly selected coordinates were used to indicate the starting point of the survey. Each household subsequent to the starting point was approached to identify participants until the requisite number of participants was identified. Trained interviewers administered the paper based survey instrument in a face-to-face basis between May 2012 and December 2012. In the event that an eligible participant was identified but was incapable of responding to the questions due to their health status, then a knowledgeable household member was interviewed. A response rate of approximately 95% is estimated for the survey.

The survey data was analyzed utilizing the STATA version 11 software (StataCorp, College Station, TX). The software was used to determine health care access and utilization patterns in the 60 and over age group.

Analysis included descriptive statistics (frequencies and proportions) of key variables, as categorized by gender and age groups, and comparing these figures to those of the 1989 survey. Analyzed variables included those that measure:

i) Socio-demographics

ii) Access and utilization patterns for key services

iii) Barriers to utilization of services

iv) Health insurance access and utilization

The Chi Square test for homogeneity was undertaken where feasible to determine significant associations between variables, and by gender and age groups. Odds ratios were used were necessary to determine the strength of bivariate relationships. An alpha of .05 was used as the cut off for significance.

A multivariate, three stage hierarchical logistic regression model was used to determine the strength of relationship between key independent variables, and the dependent variable 'has health insurance'. The dependent variable was coded as 1 and 0, while the independent variables included demographics and socioeconomic status (level 1), morbidity (level 2) and health utilization data (level 3). In terms of model fitting, each covariate included in the model was selected apriori, based on significant associations with the dependent variable. Significance was determined through inspection of CIs and p-values ($p<.05$) of the covariates from bivariate analyses; insignificant variables were left out of the hierarchical model. Checks for collinearity amongst predictor variables were also undertaken ($p>.06$) before adding variables to the model. The Hosmer-Lemeshow goodness-of-fit test produced a chi square value (8) of 2.61, with a p value of 0.96. This permitted accepting the regression model as being a 'good fit'.

3.3 Results

3.3.1 Socio-demographic data

Table 3.1 summarizes the demographic profile of the study cohort. The mean age of the cohort was 72.2 ± 8.9 years, ranging between 60 and 103 years of age. The 'young old' (60-69years) represented 44.2% of the population, the medium-old (70-79 year) 33.8% and the old-old (80 years and older) 22.0%. The cohort consisted of 52% women, who on average were older than men. The 'medium old' and the old-old were 26% (OR 1.26, 95% CI 1.06-1.49) and 49% (OR 1.49, 95% CI 1.23-1.8) more likely to be female when compared to the young-old.

Almost six percent (5.7%) of the cohort had no formal education, while 72.0% reported primary school as their ultimate source of education. Women reported significantly higher levels of education, with 2.3% more men reporting no formal education (6.9% vs. 4.6%; $p<.001$). Compared to those with no formal education, those who attended primary school and those who attended university were significantly more likely to be women.

Table 3.1: Changes in the Demographic and Socioeconomic Status of the Elderly

Variable	Sex %		Total %
	Male	Female	
Age Groups (years) (n = 2,919)			
60 – 69	48.04	40.71	44.23
70 – 79	32.62	34.85	33.78
≥80	19.34	24.44	21.99
Total	*100*	*100*	*100*
Parish of Residence (n = 2,942)			
Kingston	.85	2.68	1.8
St. Andrew	41.15	52.68	47.14
St. Thomas	7.01	7.78	7.41
St. Catherine	50.99	36.86	43.64
Total	*100*	*100*	*100*
Highest Education (n = 2,920)			
None	6.91	4.55	5.68
Primary	70.37	73.48	71.99
Secondary and higher	22.72	21.97	22.33
Total	*100*	*100*	*100*

3.3.2 Access and utilization of care

Routine source of care

Having a 'routine source of care' (RSC) is associated with increased access and utilization of health services, and by extension with lower population-level morbidity and mortality rates. As such it is important to document this variable when determining the access and utilization patterns of a population.

Graph 3.1 shows that a majority of respondents (92.9%) in the study population had a routine place or caregiver from which to access care; only 7.3% did not have such access. Within this population, 37.8% reported receiving only public care, 42.9% only private care, and 12.2% reported having both a private and a public source of routine care.

Graph 3.1: The Routine Sources of Care Amongst the Elderly
(n=2,803)
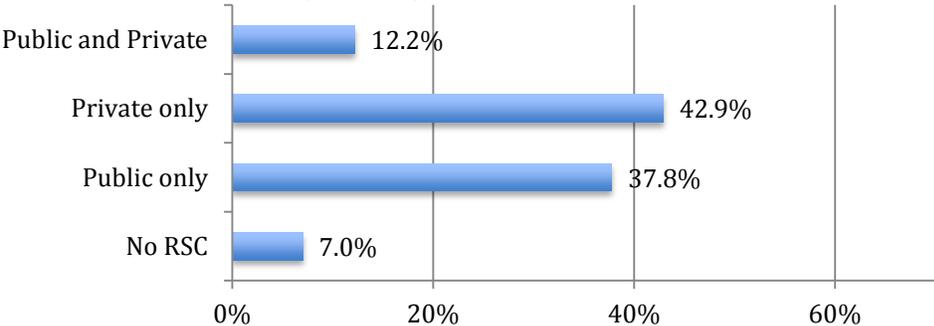
Both age and gender were found to be significantly associated with having a routine source of care (RSC). 'Increasing age' was found to be *inversely* associated with having 'no routine source of care' (p=.000); amongst those without a routine source of care, the young-old was the largest cohort (56.4%), with the smallest group without a RSC being the old-old (14.7%). Additionally, a higher proportion of men (62.4%) compared to women (37.6%) reported having 'no routine source of care', (p=.00) (not illustrated).

Table 3.2 indicates that the majority of respondents within each age group reported having a private source of care only, followed by a slightly smaller group who reported a public source of care only, and an even smaller group which used both types of care.

Both genders also reflected this utilization pattern, with 'private care' being the primary source of care accessed, followed closely behind by 'public care', and the smallest group using both. This information reinforces the findings of Graph 3.1.

Table 3.2: Age and Gender-Specific Utilization of Care

Category (N)	No RSC, % (n)	Only Public, % (n)	Only Private, % (n)	Both, % (n)	Total, % (n)
60-69 years (1,225)	9.06 (111)	38.6 (473)	39.1 (479)	13.2 (162)	*100%*
70-79 years (940)	6.1 (57)	38.9 (366)	42.5 (399)	12.6 (118)	*100%*
>= 80 years (617)	4.7 (29)	34.5 (213)	51.1 (315)	9.7 (60)	*100%*
Males (1,3460	9.1 (123)	35.7 (480)	44.6 (600)	10.6 (143)	*100%*
Females (1,457)	5.1 (74)	39.8 (580)	41.4 (603)	13.7 (200)	*100%*
Total	7.03% (197)	37.8% (n=1,060)	42.9% (1,203)	12.2% (342)	*100%*

Question 116: Do you have a particular doctor or clinic that you would call your regular doctor/clinic (private or public)?

From table 3.2 it is also evident that the age group with the largest difference in public and private use is the old-old; in this age group 48% more persons used 'private doctors only' (n= 315) compared to only using public doctors (n= 213). The young-old as is expected, showed the smallest difference in their public/private utilization pattern, with those using only private doctors being a mere 1.3% larger than those using only public doctors.

Interestingly, compared to the other age groups the oldest-old also had the lowest utilization of 'public only' doctors (34.5%), and the lowest utilization of 'both' doctors (9.7%). This trend results in the oldest-old having the largest proportion of persons that use private doctors exclusively (51.1%), and the smallest proportion using public services.

Routine Source of Care and Utilization

In terms of having a check-up in the last 12 months, 80% participants reported this event. Women and the old-old were most likely to report this activity. Women were in fact 139% (OR 1.39, 95% CI 1.93-2.96) more likely to report this occurrence than men. Compared to the young-old, the old-old (OR 2.00, 95% CI 1.54-2.72) and the medium-old (OR 1.58, 95% CI 1.25-1.98) were more likely to have seen a doctor in the past year.

A significant relationship exists between seeing a health professional in the last 12 months and having a routine source of care. In fact, compared to persons without a routine source of care, those who reported a 'public provider only' were 7.9 times (OR 7.9, 95% CI 5.7-10.9) more likely to have visited a doctor in the last year, while those reporting a 'private provider only' were 8.3 times (OR 8.3, 95% CI 6.0-11.5) more likely to have done so. The greatest impact was amongst those with both types of providers, as they were an astounding 17.9 times (OR 17.9, 95% CI 10.8-29.8) more likely to report a doctor's visit in the last year.

Access and utilization of preventive services

Preventive services are important in maintaining the health and longevity of the elderly, and preventing declines in functional ability. These services maintain individual health, thus allowing for maintenance of key quality of life indicators, and for sustained independence amongst individuals. Six preventive services relevant to elder health were assessed in the study; services include dental, vision, foot checks, mammograms, pap smears and prostate exams. Generally, utilization of preventive services was moderate to low in this cohort; all services were accessed predominantly in the private as opposed to the public sector.

The smallest percentage increase over the public sector was seen amongst foot checks (5%), and the largest for mammograms (148%). Non-governmental organizations were reported as providing a marginal amount (0.4% to 2.0%) of services in this cohort (Table 3.3).

In terms of dental care, 1 in 5 respondents (19.9%) had visited a dentist in the past year, with the private sector having an 80% increased utilization over public facilities. Gender differences were not identified in dental services; in regards to age however, the old-old were least likely to access this service, being 53% *less* likely to do so than both other ages (p=.000).

Vision care was sought by a slightly larger proportion of persons than dental care, with 1 in 3 respondents (33.5%) indicating access. Once again, the majority of persons indicated that their last 'vision care' visit was in the private (58.6%) and not the public sector (40.5%) (Table 3.3). Both gender and age differences were seen in accessing vision care. Women were 37% more likely to access this service than were men, and the medium-old were most likely to use this service. No differences were found between the young-old and the old-old, however the medium old were 29% (p=.006) more likely to use the service than both of the other two age groups.

Foot checks amongst diabetics was the service most widely reported in the last year (61.9%; n=459); unlike dental and vision care there was a much smaller difference between last accessing this service in the private (50.7%) or public sector (48.1%). No significant differences were found between the gender or age of diabetics who accessed foot checks.

Mammograms were reported by 1 in 10 (11.3%) elderly women, with private facilities showing a 148% higher utilization than public ones (n=184 versus n=74). Mammograms were accessed mostly by the young-old, and least by the old-old; in fact the old-old were 62% *less* likely to use this service than the young-old (p=.000). Pap smears were reported by even less women than mammograms, with 9.6% (n=129) reporting utilization in the last year. Similar to mammograms, there was a negative association with utilizing this service and with age; in fact the old-old were 76% (p=.000) *less* likely to access this service compared to the young-old.

Table 3.3: Access and Utilization of Key Preventive Health Services

	Dental	Vision	Foot check (Diabetics)	Mammogram	Pap Smear	Prostate
Tested with 12 months	19.9% (535)	33.6% (895)	61.9% (459)	11.3% (154)	9.6% (129)	35.1% (460)
Place of last test:						
Private	63.5% (567)	58.6% (677)	50.7% (218)	69.7% (184)	63.4% (175)	63.9% (333)
Public	35.2% (314)	40.5% (467)	48.1% (207)	28.0% (74)	34.1% (94)	35.7% (186)
NGO	1.34% (12)	0.8% (9)	1.2% (5)	1.9% (5)	2.5% (7)	0.38% (2)

Question 138: Have you had this test in the last year? Question 140:Where was this test last done (private, public, NGO)?

Prostate exams fared better than both mammograms and pap smears, with 1 in 3 (35.1%) men reporting utilization in the last year; private facilities showed a 79% increased utilization of prostate screens than the public sector (n=333 versus n=186) (Table 3.4). The middle-old was most likely to access this service, being 73% (p=.000) more likely than the young-old.

3.3.3 Barriers to accessing and utilizing care

Barriers to routine medical care

Noting the importance of having a 'routine source of care' on the health of the elderly, barriers to accessing such services must be identified and addressed as a matter of importance. Table 3.5 highlights seven such barriers experienced by this cohort in the last 12 months.

Amongst those who reported having 'no routine source of care' in the last year, the most significant barrier reported was the 'disbelief of needing care' (59.8%) (Table 3.5). No age or gender differences were identified amongst those who reported this barrier (p>.05). Interestingly, amongst those who reported 'disbelief in the need for care', 23.2% reported having either hypertension or diabetes, while 36.1% reported having at least one of 11 assessed chronic conditions. 'Cost' (27.8%) represents the second most prevalent barrier to routine care, though it was reported by less than 100 persons. The 'cost' barrier was not significantly different by age or by gender.

Table 3.4 indicates that the less widely reported barriers to routine care included a 'return doctor's visit' not being recommended (6.9%), lack of transportation (6.2%); and not having anyone to take them to the doctor (6.1%). 'Low availability of services' was not assessed to be a major barrier for assessing services with only four persons reporting this barrier.

Generally, there were no significant gender differences in reporting barriers to routine care. The only exception was amongst those who reported that a 'return doctor's visit' was not recommended at the last appointment; women were three times more likely to report this barrier than men (12.2% versus 4.0%) (p<.00) (Table 3.4). In terms of age,

the transport barrier showed a significant association with age, with the old-old being 6.3 times (OR 6.3, 95% CI 2.01-18.9) more likely to report this as a barrier than the young-old. This trend held true for those reporting 'not having anyone to take them to the doctor' as a barrier, as the old-old were significantly more likely to report this barrier than the young-old (p<.000).

Table 3.4: Barriers to Routine Medical Care in the Past Year

Factor	Women (%)				Men (%)				TOTAL, % (n)
	60-69	70-79	≥80	Total	60-69	70-79	≥80	Total	
Don't need one	56.2	51.7	57.9	55.4	63.0	57.4	67.7	62.0	59.8 (216)
Cost	34.7	33.3	26.3	33.1	24.1	26.5	25.8	25.0	27.8 (99)
*Transport	4.2	11.1	21.1	8.6	2.3	4.5	12.9	4.4	6.2 (22)
¥ Not recommended	8.0	18.0	16.0	12.2	4.3	4.1	2.9	4.0	6.9 (27)
No service available	1.4	0.0	0.0	0.8	1.5	1.5	0.0	1.3	1.1 (4)
No time	5.6	3.7	5.6	5.2	7.6	0.0	6.5	5.2	5.1 (18)
*No-one to take them	0.0	11.4	27.3	7.5	2.9	2.9	21.9	5.5	6.1 (23)

* Significant difference between age groups (p<.00)
¥ Significant between genders (p<.00)
Note that categories were not mutually exclusive.
Question 124: If no routine care in the past year, what are the reasons for not having a check-up (Multiple answers)?

Barriers to health services

Graph 3.2 illustrates specific types of services the elderly found to be most difficult to access. Medical care (28.5%) and prescription medications (23.9%) were the services most reported as difficult to access by respondents. X-rays (8.5%), hospital care (9.9%) and tests (10.9%) were less-widely reported as being the hardest to access. All age-groups and genders found these services equally easy/difficult to access.

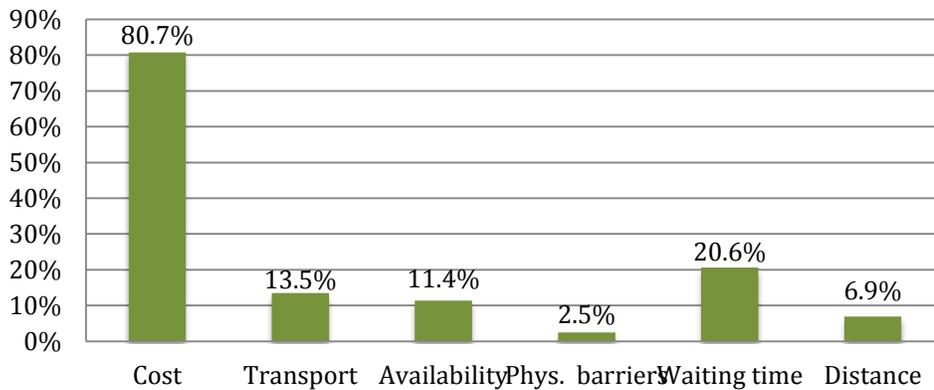Graph 3.2: Health Services that are Most Difficult to Access
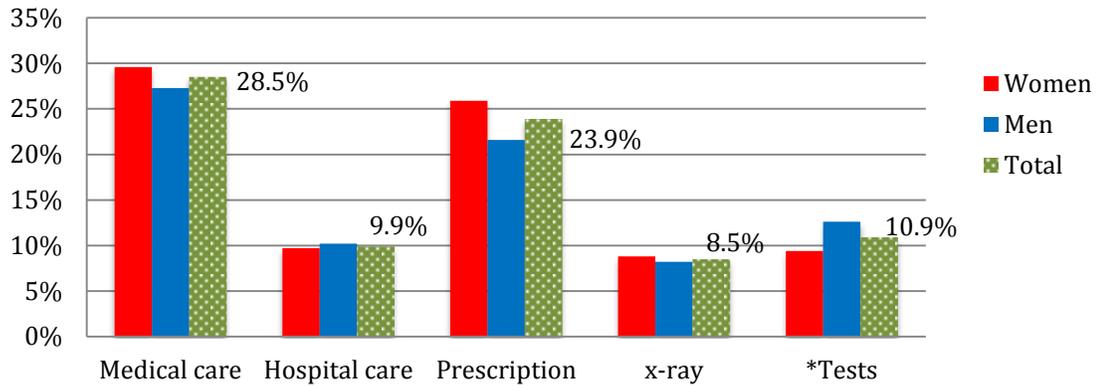
Categories are mutually exclusive
Questions186: What aspect of medical care do you find most difficult to access? (One answer),

In regards to accessing these services, 'cost' emerged as the single most important barrier with 80% of respondents reporting this as a factor (Graph 3). Waiting time (20.6%) was reported as the second but comparatively much smaller barrier, while transportation (13.5%) was the third most prevalent barrier.

Graph 3.3: Barriers to Accessing Health Services

Question 186-187 What aspects of medical care do you find most difficult to access? Why (list responses)?

Table 3.5 reinforces that 'cost' was a major barrier in accessing all health services despite there being no user fees in the public system. Those who reported 'medical care' as the service which was most difficult to access, reported cost (77.8%) as the major barrier followed by waiting time (31.4%), and transportation (16.6%). Persons who indicated 'prescriptions' as being most difficult to access, once again reported cost (93.2%) as the major barrier, followed by availability of drugs (16.3%).

Table 3.5: Reasons for Key Health Services Being Difficult to Access

Services (%)	Cost	Transport	Availability	Phys. Barriers	Waiting Time	Distance
Medical Care	77.5% (547)	16.6 (115)	9.4% (65)	3.3% (23)	31.4% (221)	5.1% (35)
Prescription	93.2% (565)	4.2% (25)	16.3% (96)	1.2% (7)	4.6% (27)	1.5% (9)
X-ray	93.9% (201)	12.4% (26)	9.57% (20)	1.9% (4)	8.1% (17)	8.6% (18)
Tests	91.9% (251)	14.9% (40)	9.29% (25)	2.2% (6)	7.8% (21)	7.8% (21)
Hospital Care	36.7% (90)	27.8% (68)	7.4% (18)	4.1% (10)	51.2% (128)	22.5% (9)
Overall Total	80.7% (1,667)	13.5% (274)	11.4% (231)	2.5% (50)	20.6% (420)	6.9% (139)

Questions186: What aspect of medical care do you find most difficult to access? (One answer), and Q187) Why? (Multiple answers)

Contrary to other services, access to 'hospital care' was not hindered primarily by cost, but rather by 'waiting time' for service (51%). Cost (36.7%) was however the second most reported barrier for hospital care, with transport (27.8%) and distance (22.5%) being other notable obstacles. 'Physical barriers' to services did not seem to be a major obstacle in receiving access to any of the services reported.

Payment for services in the government health facilities

Cost was identified in this analysis as the single largest barrier to accessing health services; this trend persists in spite of the government of Jamaica removing user fees from the publicly operated health sector. To better understand this barrier to care, respondents were asked about payment for four major health services over the past three years in the public system; doctor visits, x-rays, medications and tests. Amongst the study cohort 57% indicated they had not paid for any services within the government services over the past three years, while 43% reported having paid for services. Almost 20% (19.7%) of respondents indicated they paid for one service, while 23.3% reported paying for two or more services.

Graph 3.4 shows the specific public services for which respondents indicated payment. Amongst the almost 3,000 elderly persons surveyed, 1 in 4 persons (26%) reported paying for doctors visit; 1 in 3 persons (30.7%) reported paying for medications; 1 in 5 persons (21%) reported paying for tests; and 1 in 10 (13.6%) paying for x-rays.

Graph 3.4: Proportion of the Study Cohort Paying for Public Care (n=2,438)
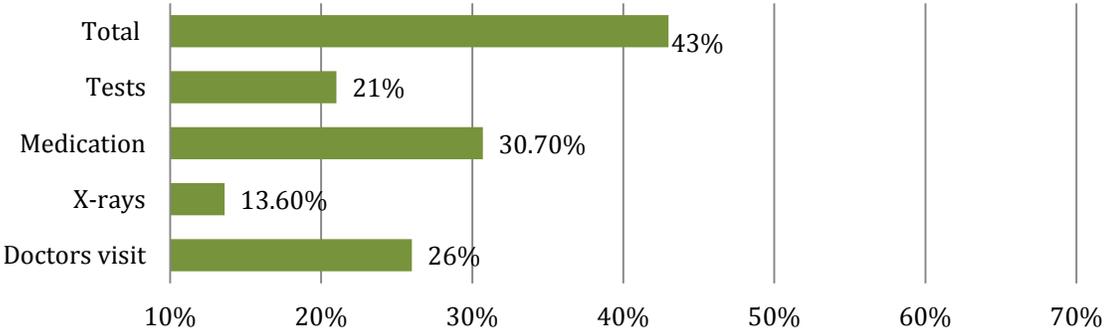
Question 134: Have you paid for any health care as a result of a visit to the health center or public hospital?
Categories are not mutually exclusive

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3.3.4 Access and utilization of pharmacy services

'Prescriptions' were identified within this cohort as the second largest barrier to accessing health care; as such pharmacy services will now be analyzed. In Jamaica there are three types of pharmacies operated nationally; private, public and DrugServ (extended public) pharmacies. Pharmacies are utilized in this population almost exclusively as a source of drug dispensation, as only 5.1% of respondents indicated they would visit a pharmacy to get health advice or a consultation.

Preference for pharmacy type

Amongst respondents, 62.6% reported routinely buying drugs in the private sector, while 56% reported buying in the public sector, and 27% from DrugServ (categories were not mutually exclusive). Approximately 1.7% of the population indicated not using pharmacies at all. Amongst pharmacy users the majority of respondents (63.0%) indicated that they do not mix the type of pharmacies they utilize, using one primary type of pharmacy to fulfill their needs. More than 1 in 3 respondents (37.0%) migrated between pharmacies; 28.2% used a combination of two pharmacies, while 8.8% used all three types.

The type of pharmacy used was not generally affected by age or gender, with the only exception being that women were found to use private pharmacies significantly more than men (64.5% versus 60.3%; p=.03).

Drug affordability and availability

Graph 3.2 (see above) illustrates that almost 1 in 4 persons (23.9%) identify 'prescriptions' as their major barrier to health care. To better understand this barrier the access and utilization of drugs amongst the elderly was assessed through two major

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constructs; drug availability and drug affordability. Graph 3.5 indicates that of the two constructs, drug affordability was the greater barrier with 62.8% of respondents indicating some level of difficulty in accessing drugs; only 37.2% reported always being able to afford drugs, while 30.8% reported it as being a very difficult or impossible task.

Drug availability was a smaller but still noteworthy barrier to accessing medications, with 23.4% of respondents indicating some difficulty in locating the drugs they needed; 76.6% indicated that drugs were always available, while 7.2% reported that they were very difficult or impossible to find (Graph 3.5). These findings support data from Table 3.6 which indicates that amongst those who consider 'prescriptions' as the major barrier to health care, affordability (93.2%) was a much larger barrier than was drug availability (16.3%). Neither drug availability nor affordability varied significantly by age group or by gender.

Graph 3.5: Elderly Ability to Locate and Afford Prescribed Drugs
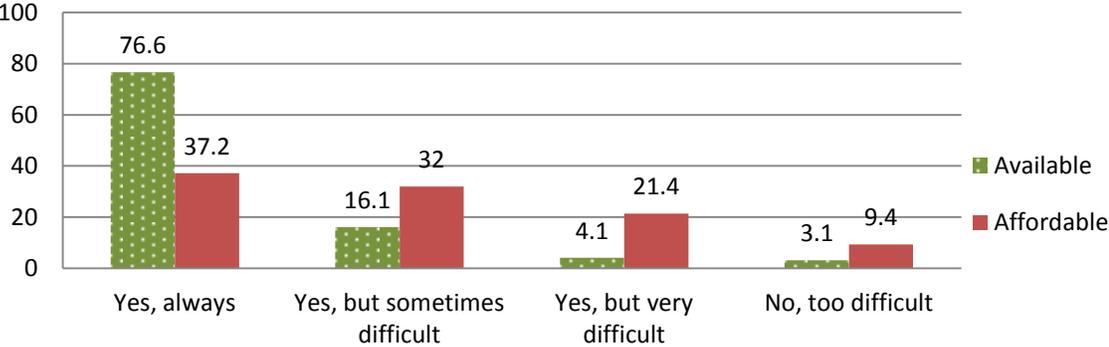
Prescription medication

Generally, most conditions had between 66.7% and 92.5% of respondents indicating they are currently taking their medication (note that neither timeliness nor frequency was assessed). The conditions which had the highest proportion of persons taking their medications were diabetes (92.5%), heart conditions (90.8%), high cholesterol

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(87.7%), and high blood pressure (86.5%). The condition with the lowest proportion of persons taking their prescribed drug was Asthma at 8.2% (Appendix 1). Whether respondents took their medication or not was not significantly associated with age, nor was it associated with gender. The only exception being that women were 5% more likely to take their blood pressure medication (p<.05) than men.
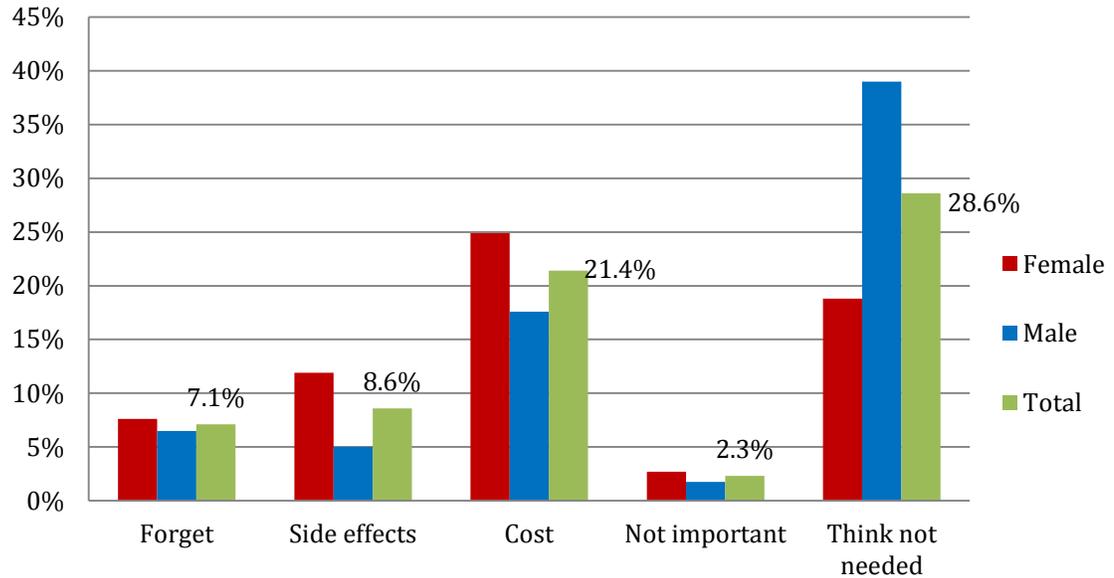
Barriers to taking medication

Graph 3.6 indicates that 'cost' (21.4%) and 'disbelief in the need for medication' (28.6%) were the major reasons reported for not taking medication. Very few (2.3%) respondents indicated the belief that the drugs were 'not important'.

Women (OR 1.55, 95% CI 1.06-2.27) were more likely than men to report 'cost' as a reason for non-adherence, and were more likely to report 'side effects' (OR 2.54, 95% CI 1.38-4.84) as the reasons for not taking their medication. Men (OR 2.79, 95% CI 2.0-3.99) on the other hand were more likely to report that they didn't need to be taking the medication.

'Disbelief in the need for drugs' was the only barrier to adherence that was significantly different by age group; 'increasing age' resulted in fewer people holding this view. Men between 60 and 69 years of age were therefore the most likely to report this complaint (48%).

Graph 3.6: Reasons for Not Taking Medications

Question 89: If you are not taking your prescribed meds, why not (multiple answers)?

Taking medication and hypertension/diabetes

Amongst the 156 persons admitting to not taking their anti-hypertensive medications, 'cost' (28.9%) and the belief that the medication was not needed (33.1%) were the major barriers. Amongst diabetics however 31.6% reported cost as a barrier, while 41.0% indicated they didn't believe they needed it. Other barriers were not highly reported.

Taking medication and insurance status

There was a significant difference between the insured and the uninsured in regards to not taking medication because of cost; 61.50% of those who didn't take medication due to 'cost', had no health insurance/drug subsidy card.

3.3.5 Access to devices/supplies

In order to maintain the functionality and independence of the elderly, personal care supplies, mobility devices, and sensory devices may be important aspects of daily living. The elderly may require assistance in procuring these devices/supplies due to their cost and/or availability. Graph 3.7 illustrates elder need for assistance in accessing these supplies (Table 3.6).

Generally, the elderly cohort did not report a great need for assisted living supplies/devices. The greatest need by far was in regards to accessing glasses (45.9%). All other devices/supplies were reported by less than 10% of the population. Generally, increasing age and being female were associated with increased need for assistance in accessing these supplies.

Graph 3.7: Need for Assistance in Accessing Devices/ Supplies
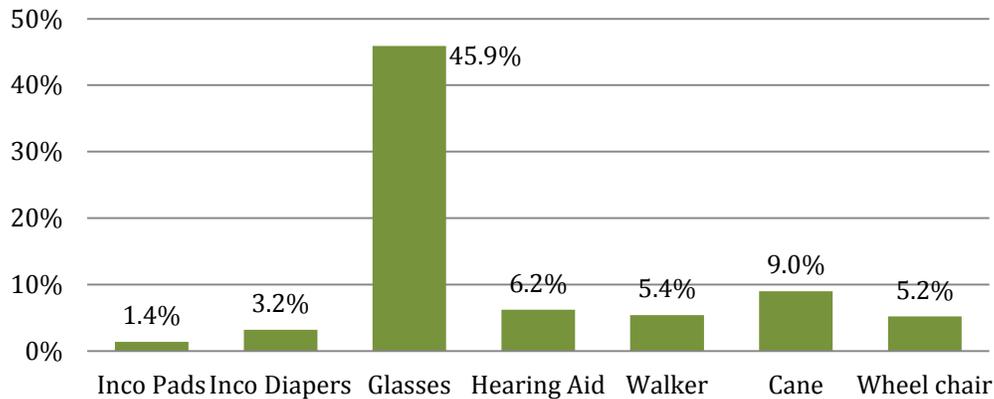
Question 189: Do you need any assistance with medical devices (multiple answers)?

Sensory devices

The need for a pair of glasses was reported by approximately 1 in 2 persons (45.9%), with women (OR 1.55, 95% CI 1.33-1.80) being more likely to report this need than men (Table 3.6). Age did not play a factor in whether the elderly needed glasses, with

a similar proportion of each age group indicating this need (44-46%) (p>.05). This indicates a great need for accessing glasses even amongst the youngest group; the need for glasses must therefore be addressed equally throughout the elderly age continuum.

Assistance for hearing aids was much less than for glasses, with only 6.2% of the cohort reporting this need (Table 9). Both men and women reported a similar need for the hearing aids (p>.05), however the old-old (OR 3.64, 95% CI 2.49-5.33) were more likely to report needing this device than either of the two younger age groups which were both equal to each other.

Table 3.6: Odds Ratios for Key Devices of Assisted Living, Adjusted by Age and Gender

	Wheelchair		Walker		Cane		Hearing aid		Glasses	
	aOR	95% CI	aOR	95% CI	aOR	95% CI	cOR	95% CI	cOR	95% CI
Male	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Female	1.88*	1.32-2.68	1.62*	1.15-2.29	1.31*	1.0-1.71	1.09	0.81-1.49	1.55*	1.33-1.80
60-69yrs	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
70-79yrs	1.40	0.92-2.14	1.89*	1.19-2.99	2.24*	1.58-3.18	1.47	0.99-2.21	1.00	0.84-1.18
>80yrs	2.80*	1.86-4.20	5.02*	3.28- 7.71	4.58*	3.25-6.46	3.64*	2.50-5.31	0.93	0.76-1.13

*Significant after adjustment (at p<.05).
Odds Ratios were adjusted where applicable for sex, or age. Where not applicable, the crude OR was reported instead.
Question 189: Do you need any assistance with medical devices (multiple answers)?

Mobility devices

In terms of mobility, walking canes (9.0%) were the most needed, followed by walkers (5.4%), and wheel chairs (5.2%). Table 3.6 indicates that for walking canes, the oldest age group (OR 4.58, 95% CI 3.25-6.46) was more likely to need assistance than the young-old. This trend held for walkers and for wheelchairs, where the old-old were 400% (95% CI 3.28-7.71) and 180% (95% CI 1.86-4.20) more likely to need assistance than the young-old.

Summary

While glasses (49.5%) were the most requested device, incontinent pads (1.4%) and diapers (3.2%) were the supplies that the elderly reported needing the least help in accessing. With the exception of hearing aids, women reported a greater need for assistance in getting each device as compared to men (p<.05); and with the exception of glasses the demand for all devices were highest amongst the old-old.

3.3.6 Access to Community Services

Contrary to 'devices of assisted living', the desire for community-based services was very high amongst this cohort, with between 40% and 59% of the cohort indicating the need for each of the six services assessed (Graph 3.8).

The greatest needs were for ambulance services (58.7%) and for home health services (55.3%), with more than 1 in 2 persons requiring each of these services. The need for 'home help' was the least requested service, with more than 1 in 3 persons being interested in this service (36.3%). The need did not vary significantly by age nor by gender.

Graph 3.8: Community Services Requested by the Elderly
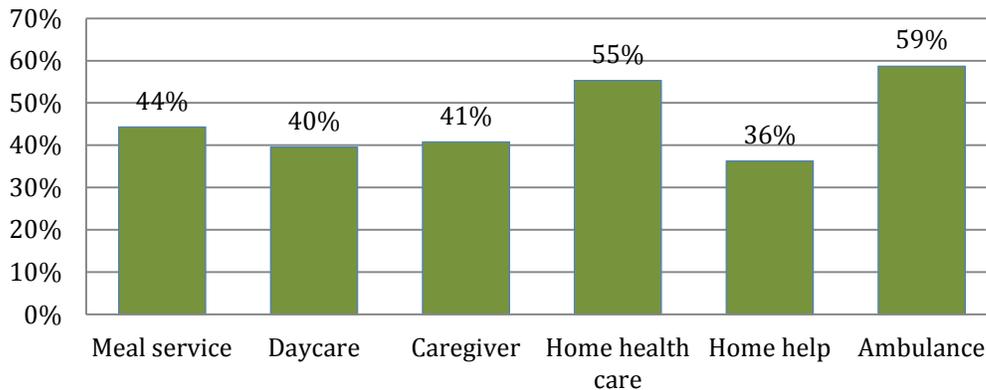
None significant at p<.05 for gender nor age
Question 188: What community services would you like to have available (multiple answers)?

3.3.7 Access and utilization of health insurance and drug cards

Health Insurance

Access and utilization of health insurance, is a widely accepted predictor of positive health outcomes and increased longevity. Only **22.6%** of respondents indicated having health insurance, with the majority of this being due to private insurance from '*Sagicor*' (18.1%). The NI-Gold government insurance card was accessed by only 3.8% of the cohort, with Government of Jamaica insurance being accessed by only 1.6%.

Table 3.7 shows a three-tier hierarchical regression model assessing the predictors of health insurance in this population; both crude and adjusted associations are presented. Data from this model is particularly important as uptake of this health promoting service is so low, thus potentially having significant implications for the elderly population. This model is estimated to explain approximately 23% of the outcome variable.

Considering the wide spreading cultural and social phenomenon that dictates the uptake of health insurance, it is the author's belief that this represents a more than adequate model that will be beneficial to policy makers. Additionally, the goodness of fit of this model was extremely good with a p-value of 0.96.

After tier-1 adjustment, it is evident that health insurance coverage does not vary by gender, and was highest amongst the medium-old and amongst those who are/were married (i.e. single persons had the lowest utilization of insurance). The major demographic variables that were positively associated with health insurance were 'education level' and 'having planned for retirement'. Persons with a university education (OR=5.0, 95% CI 2.86-9.25) reported a higher likelihood of having insurance than those without education. Those who reported retirement planning (OR 355, 95% CI 2.79-4.53),

had an increased likelihood of insurance compared to those who had not undertaken such planning. Another major factor predicting insurance coverage was 'employer status'; the government employed had the highest likelihood of having health insurance, while private sector employees were 54% (OR 1.54, 95% CI 0.36-0.58) less likely to have insurance, and the self-employed had the lowest likelihood (76%).

Tier-2 shows that morbidity had little impact on accessing health insurance, with little differences being identified between crude and adjusted models. From these adjustments, it is evident that persons with a chronic disease (OR 1.33, 95% CI 1.01-1.77) had an increased likelihood of having health insurance compared to those without such diseases. Additionally, persons with cognitive impairment (OR 0.40, 95% CI 0.25-0.68) were less likely to have insurance that those without impairment. Functional ability, depression, nor eye disease was found to affect health insurance status uptake.

Tier-3 represents the most adjusted tier in the model, with only possession of NHF and/or JADEP was shown to significantly impact access to health insurance. In fact, persons having any combination of drug cards were over 100% more likely to already have health insurance. This points to the drug cards having higher utilization amongst persons who are better educated, and who worked in the formal work sector.

Table 3.7: Crude and Adjusted Odds Ratios for Health Insurance Amongst the Elderly

| Variables	Crude OR (95% CI)	Adjusted OR (95% CI)
LEVEL 1 (DEMOGRAPHICS and SES) (Pseudo R2 =.16)		
Gender		
Men	1	-
Women	1.11 (.93-1.32)	-
Age		
60-69	1	1
70-79	1.42 (1.17-1.73)*	1.46 (1.16-1.84)*
>80	1.04 (.82-1.32)	1.0 (.75-1.33)
Marital Status		
Single	1	1
Married/Common law	1.67 (1.34-2.07)*	1.39 (1.08-1.79)*
Widow	1.54 (1.21-1.97)*	1.48 (1.10-1.99)*
Divorce/Separated	2.07 (1.46-2.93)*	1.78 (1.20-2.63)*
Education		
None	1	1
Primary	1.17 (.76-1.80)	1.26 (.78-2.03)
Secondary	2.41 (1.50-3.88)*	1.99 (1.18-3.36)*
Technical/vocational	3.07 (1.78-5.30)*	2.02 (1.10-3.70)*
University	9.52 (5.60-16.20)*	5.15 (2.86-9.25)*
Main Employer		
Government	1	1
Private	.33 (.27-.41)*	.46 (.36-.58)*
Self employed	.15 (.12-.20)*	.24 (.18-.33)*
Planned for retirement	5.0 (4.0-6.20)*	3.55 (2.79-4.53)*
LEVEL 2 (MORBIDITY) (R2 = .18)		
Disease status		
Chronic disease	1.36 (1.10-1.69)*	1.33 (1.01-1.77)*
Cognitive Impairment	0.30 (.20-.45)*	0.41 (.25-.68)*
Functional ability	0.57 (.38-.83)*	0.97 (.57-1.67)
Depression	0.80 (.70-.90)*	0.95 (.81-1.10)
Cataracts/glaucoma	1.10 (.91-1.32)	-
LEVEL 3 (HEALTH SERVICES) (R2=.24)		
Doctors visit in last year	2.07 (1.56-2.7)*	1.12 (.60-2.09)
Routine Health Provider		
None	1	1
Public only	0.88 (.57-1.34)	0.70 (.26-1.86)
Private only	2.6 (1.73-3.91)*	1.00 (.38-2.60)
Both	1.69 (1.07-2.69)*	.97 (.34-2.80)
Pharmacy		
Public only	1	1
Private only	2.49 (1.89-3.27)*	1.09 (.73-1.63)
Drugserv only	0.77 (.44-1.35)	0.70 (.35-1.40)
NHF/JADEP		
None	1	1
NHF only	2.81 (2.11-3.74)*	2.00 (1.18-3.41)*
JADEP only	1.83 (1.23-2.73)*	2.26 (1.12-4.53)*
Both NHF/JADEP	3.17 (2.60-3.85)*	2.08 (1.42-3.04)*
Preventive Services		
None	1	1
One	1.75(1.39-2.22)*	1.40 (.89-2.21)
Two	2.06 (1.60-2.65)*	1.44 (.89-2.32)
More than 3	2.57 (1.96-3.38)*	1.00 (.58-1.69)

*Significant at p<.05

Goodness of fit: Homer Lemeshow chi2(8) = 2.61; p=0.96

Access to drug assistance

Drug assistance in Jamaica may be accessed either through health insurance cards or through government subsidized drug cards (JADEP and NHF) (Graph 3.9). Health insurance and drug cards may be used separately, or in combination with each other to subsidize the cost of drugs.

Graph 3.9: Types of Health Cards Accessed by the Study Cohort (n=2,943)
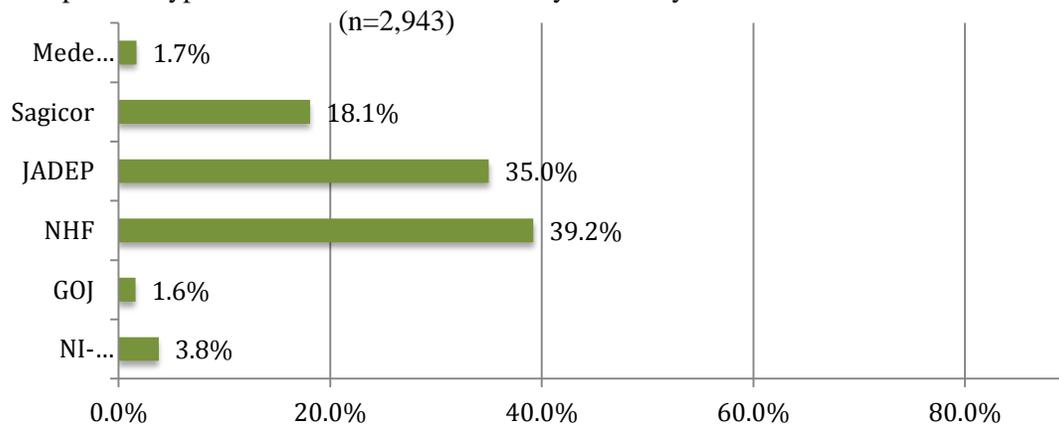

Categories not mutually exclusive
Questions 125-126 Do you have health insurance? If yes, which health insurance do you have (multiple answers)?

The most widely accessed 'health card' was from the NHF (39.2%), closely followed by JADEP (35.0%), and Sagicor a distant third (18%) (Graph 3.9). Approximately 46.4% of the population accessed at least one health card, with 1 in 3 (32%) persons using two or more types. This indicates that almost half of the elderly have some form of assistance (whether drug subsidy or health insurance) in accessing their prescription medications. It also points to the fact that government issued drug cards are the predominant form of subsidizing the cost of prescription drugs, as opposed to health insurance.

NHF and JADEP were the most widely accessed health cards amongst this population, with most persons accessing these cards together i.e. 29.8% of respondents have *both* NHF and JADEP cards. Uptake of these cards remain low, as more than half of the population (55.6%; n=1,636) did not have either of these subsidies (Graph 3.10).

Graph 3.10: Distribution of Drug Subsidy Cards
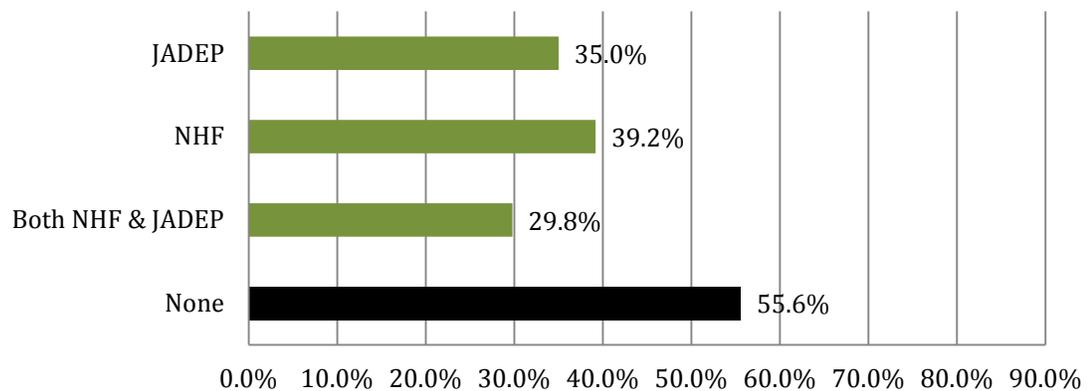
Amongst diabetics, 60% reported having NHF, while 54.8% reported having JADEP. Considering the services (e.g. HbA1C tests) and supplies (e.g. test strips) subsidized through NHF for diabetics, it is surprising that uptake isn't higher. Amongst hypertensive patients, 49% had NHF, while 45% had JADEP. Interestingly, of the 572 persons with private health cards, 64.3% had NHF or JADEP cards; this points to the high uptake of government health cards amongst the privately insured. The university-educated elderly had a 220% higher likelihood of having NHF and a 174% higher likelihood of having JADEP compared to those without education. These factors point to high uptake amongst higher SES groups.

Unlike health insurance, gender and age differences were identified amongst users of NHF and JADEP. Women were more likely to access NHF cards (OR 1.80, 95% CI 1.55-2.09) and JADEP cards (OR 1.72, 95% CI 1.48-2.01) than men. In terms of age, the middle-old were most likely to report having NHF; this age group was 37% (95% CI 1.16-1.63) more likely to report accessing NHF than the young-old. The old-old were most likely to access JADEP however, with the old-old having 56% (95% CI 1.28- 1.90) more access than the young old.

3.4 Discussion

This section will seek to better understand some of the issues highlighted in the results section, and to hypothesize possible reasons for these occurrences. These discussions may be helpful to policy makers/implementers, in the crafting of new elder policies.

Routine source of care and utilization

Utilization of services, especially in PHC, is associated with improved quality of life and reduced pre-mature mortality. Having a routine source of care and having health insurance are two of the most widely used indicators of access to health services. Increased uptake of such services amongst the elderly is likely to be beneficial in reducing hospitalizations due to controllable ambulatory sensitive conditions such as diabetes and hypertension, and with associated costs.

The study cohort reported high access to services with 92.7% indicating having a RSC, and 80% indicating a routine checkup in the past year. RSC and routine check-ups were found to be strongly associated with each other. Persons who report having a public RSC being almost 8 times more likely to utilize health services than those without a RSC,

while those who reported both a private and public RSC were almost 18 times more likely to do so. This provides the evidence needed to support the strengthening of PHC to better serve the needs of the older population.

A much weaker crude relationship was found between having health insurance and having a checkup in the last year (OR= 2.07; 95% CI 1.56-2.7). This weaker relationship is not surprising as Sox et al (1998) reported that compared to having health insurance, a RSC results in a much higher odds (OR=4.50%; 95% CI 3.3- 6.1) of actually utilizing health care. They also report that having no RSC resulted in a 60-80% increased odds of delaying urgent care and requiring a hospital visit compared to those with no insurance.

The strong association between utilization and RSC points to the importance of removing/reducing barriers to accessing PHC on a regular basis, and facilitating environments where enhanced relationships may be established between health staff and patients. This is likely to be a more cost effective and efficient means of improving utilization of services, than solely focusing on increasing insurance uptake.

Lowered barriers to PHC may foster a sense of ownership and 'belonging' amongst patients, thus helping them to identify primary care facilities as their RSC, and subsequently increase their utilization of these services. Sensitization campaigns may be especially important amongst men, and the 'young-old' as they are least likely to report having a RSC, and least likely to report utilizing health services.

Sources of care

The major source of care in this population came from the private sector, with all age groups and both genders preferring this form of care. The 'old-old' were the group most likely to report using private doctors, and were least likely to report using public

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facilities. This finding is not surprising as the Jamaica Survey of Living Conditions (SLC) reports that other than children and the middle aged, the rest of the population preferentially utilizes private doctors (PIOJ, 2010). Bailey et al (2009) purports that such barriers result in not only the 'non poor' but also the 'poor' seeking access to private facilities. Worryingly, reports of private utilization increased, rather than weakened after the removal of public user fees; the SLC reports that post 2008, the proportion of persons in each income bracket using private services all increased (PIOJ, 2010).

The preferential use of the private sector in spite of concerns about cost is likely to be indicative of comparatively higher access barriers (especially amongst the old-old) to public services e.g. long waiting times and non-availability of services. The removal of user fees does not seem to have addressed these barriers to utilizing public services, and at worst may have inadvertently reduced access for the vulnerable.

Preventive services

Utilization of preventive services is generally associated with having a RSC, however the high RSC rates did not translate into high uptake of preventive services in private nor public practice. In fact, public service uptake was objectively and comparatively low. Preventive services ranged from being extremely low in the case of pap-smears and mammograms (10-11%), to moderately high in the case of diabetic foot checks (62%). This indicates significant missed opportunities to prevent disease and disability in the elderly, which may lead to unnecessary financial and social costs.

Low uptake of preventive care in the public sector may be due to two reasons: 1) poor perception of the value of preventive care, and/or ii) low availability of services in the public sector.

Poor perception of preventive care: The 'Integrated health care systems response to rapid populations ageing in developing countries' (INTRA) study indicated that preventive care for the elderly was not widely embraced by either health providers or the elderly (Eldemire-Shearer, 2009). INTRA focus group discussions highlighted that the elderly believed poor health was associated with old age, and that this could not be altered or changed by preventive interventions. The elderly indicated that medical care was valuable for treatment of acute illnesses, with preventive care being seen as 'new age' and unnecessary. Similar attitudes were expressed by health staff, who stated that it was too late to prevent disease and practice healthy lifestyles in the elderly as the 'damage has already been done' (Eldemire-Shearer, 2009). Staff expressed doubt in the elderly's ability to engage in lifestyle changes, and to embrace healthy activities such as exercising and eating healthily. Instead the elderly were referred to as being 'miserable, difficult and set in their ways' (Eldemire-Shearer, 2009). The poor perception of prevention on the part of both the elderly and the health staff, is likely to be a major factor affecting the uptake of services in both private and public sectors.

Low availability of preventive services: In addition to preventive care being poorly adhered to by health providers and the elderly, the low uptake of these services may be due to low availability in the government sector. This may explain why preventive service uptake is much lower in the public sector as compared to the private sector. Dental services in the government system for example, are offered in all Type three to Type five health centers, however preventive services are limited as tooth extractions are the major service offered. The low uptake of mammograms by elderly women, is also encouraged by the complete absence of such services in the public primary and secondary care systems.

Prostate screens fare a bit better, as even though there is no formal structure in place for this exam, uptake is possible if the medical officer on duty self-identifies as being competent in to undertake this test and is motivated enough to do so. Recent aggressive campaigns to sensitize the population on the high prostate cancer rates in Jamaica is also credited with increased screening uptake amongst Jamaican men.

Service Barriers

In terms of accessing services most respondents indicated 'cost' (81 %) was a barrier, followed distantly by 'waiting time' (31%) and 'transport' (17%). The specific services which were most difficult to access were medical care and prescription drugs. This was surprising in light of the removal of user fees, and the availability of drug subsidy cards for this population. Barriers to medical and pharmacy services will be discussed in the following sections.

i) Barriers to medical care

'Cost' was the major barrier reported in regards to accessing medical care, and may have been due to two major reasons: i) preferential use of private services; ii) reports of cost being subject to recall bias; and iii) heavy referral from the public to private sector.

The fact that the private sector trend persists in spite of a free alternative in the public sector indicates that barriers (e.g. waiting time and transport) to utilizing the public system may be so high that patients would rather absorb the cost burden at the private providers.

Poor customer satisfaction and lower perception of quality in the public sector may also play a role (PAHO, 2012); other studies undertaken in this cohort did not find such results (Eldemire-Shearer, 2009). This is particularly worrying when we consider that the elderly are a high disease burden group with limited resources and fixed-incomes and in need of close medical attention.

Upon considering only respondents who access public services, 43% of the cohort reporting having paid for services such as medication, doctors' visits and tests in the public sector in the last three years. Cash collection systems have been removed from health facilities, and under-the-counter exchange of money has not been reported, making these reports of public sector payments quite concerning. One explanation is that recall bias is at play, and patients are confusing payments at private facilities with public facilities, or alternately, they are thinking of the costs for services prior to the removal of user fees. This, in addition to lack of awareness about the removal of user fees may have left persons with the erroneous assertion that they still need to pay for services.

Another explanation for 'cost' being a barrier amongst public clients, may be due to limited availability of supplies/lab services in public facilities. This may result in public doctors encouraging patients to access the private sector for tests, X-rays and laboratory procedures; this may be especially true in time-sensitive situations where it is unadvisable for the patient to be added to a waiting list to receive the test/service. Unfortunately this public private mix of care introduces costs to public sector patients, through not only the private services accessed but also due to the additional transport and time costs to maneuver between the public and private sectors.

Amongst those patients who did not report paying for public services (57%), the general consensus was that services were much more accessible than in previous times. One urban focus group discussion (FGD) participant indicated that:

"You can go to...any government clinic…and go KPH [Kingston Public Hospital] and all you need is to have time and patience. You may buck up on one or two little [h]itches… but if you have patience you get through with everything even your medicine… You nah go die if you want medical care" (Nevins, 2013).

Waiting time (and service organization)

In terms of the second barrier to medical care, 31% of respondents reported long waiting times as a significant deterrent. One such reason may be due to how services are organized and delivered in the public sector. Bailey et al (2009) notes that the distribution of public facilities and the types of services provided at these facilities add to barriers encountered by the elderly. Type 1 health centers for example offer a limited variety of services (mostly maternal and child health), and are not staffed by a doctor; however they are found in rural areas (Goffe & McCartney, 2008) which unfortunately serve a large elderly population (Bailey, 2009). This means that to access chronic disease care, the elderly may need to bypass their local health center to access a larger, urban health center or outpatient clinic which offers chronic disease care, and laboratory/pharmacy services. As the general population and more specifically the elderly increase in numbers, considerations must be made into formally upgrading all health centers to provide a comprehensive set of services that fulfill the needs of their populations. This is corroborated by focus group discussions (FGDs) where one participant indicated that:

"The population in Jamaica has grown so much, the hospitals and health centers cannot

cope with them any more...you go to UHWI for instance and see crowds a people waiting". Staff complement, and the size of facilities were also concerns identified in these FGDs (Nevins, 2013).

Waiting time in the public sector also poses an issue because 'appointments' in the traditional sense of the word are not given in these facilities. Health centers have a pre-defined number of patients that will be seen on each day, and those patients are seen based on their ticket number (i.e. a first come, first serve basis). FGDs report a rural male's perception of this as *"you go to the clinic...when you get number 100 ticket maybe [it is] 5 o'clock a evening [to see the] doctor"* (Nevins, 2013).

This system is inherently biased against the elderly who may not be as agile as younger age groups in getting a ticket to be seen. To compensate for this barrier, the elderly therefore need to visit the health center hours before opening time so as to increase the chance of being seen that day. Follow-up visits entail the same process, as even though a return date is given the luxury of a specified time-slot is not. These reports of long waiting times at public health centers, and being turned away without being seen, are corroborated by previous focus groups amongst the Jamaican elderly (Cloose, 2010; Eldemire-Shearer, 2004; WHO, 2004a). Nevins (2013) reported the following quote from an elder FGD:

"Some of the clinic could be better organized: it too loose, waiting time and all a dat. Waiting time for registering particularly, ... when you go you may be in pain and through the length of time yuh waiting at registration you say to yuhself if [only] I had me money..."

FGDs in this population have also documented the desire for special clinic days for the elderly, as this is thought to reduce inter-generational competition, long wait times, allows for better communication with doctors on their special needs, and would give them a more comfortable experience (WHO, 2004a; Nevins, 2013). One 2012 respondent reflected the group sentiment by stating:

"There could be some [elder] clinics because there are certain things that older people suffer from…[also] it would not annoy the younger persons so much to see them[the elderly]". FGDs undertaken by the WHO (2004) also reflected this sentiment: *"I want to come only when seniors come….the young ones are too noisy and do bad, unacceptable things."* Health providers supported this view by stating: *"they [the elderly] come late because of the distance and can go home without being seen. They should have their own day so everyone who comes can be seen".*

Transport

Transportation was reported by 17% of the cohort as a major barrier to accessing medical care and was also reported as a limitation to having a routine doctor's visit in the last year. The old-old were over 6 times more likely than the young old to report not visiting a doctor in the last year due to transportation issues. Interestingly, 96% of persons who reported transportation as a barrier to a checkup in the last year also reported 'cost' as a barrier. This may point to the 'cost' barrier as being inclusive of indirect costs such as transportation. The lack of services (type 1 health center) and bus routes in rural areas are expected to contribute to this transportation barrier.

Perception of need for care

In addition to the above-mentioned barriers to medical care, one additional barrier noted to having a check-up in the last year was a 'disbelief in the need for care' (60%). This barrier, in addition to reports of not having a checkup because 'it wasn't recommended' at the last doctor's visit, indicates the need for improved doctor-patient communication and greater health education amongst the chronically ill and the elderly in regards to their need for annual checkups. Statistically there were no significant differences between genders in reporting this barrier. FDGs by Nevins (2013), and INTRA (Eldemire-Shearer, 2009) indicated a gender bias in attending health centers however. In the FGDs men emphasized physical prowess, and the power of herbal remedies as major reasons for not visiting health centers. Additional reasons included a happenstance approach that 'whatever is to be will be' as God is in control.

ii) Barriers to prescription drugs

After medical care, prescription drugs were the next services reported as being most difficult to access. Barriers to this service will now be addressed.

Prescription drugs were reported by almost 1 in 4 persons as the greatest barrier to care, with affordability and availability of drugs being the major barriers to this service. It is not surprising that cost is the major barrier for drugs as most respondents (63%) reported using private pharmacies to fill prescriptions. This is in keeping with an estimate of 75% of the general population using private pharmacies (Bailey, 2009). Considering that prescription drugs may be accessed free of charge in public facilities, the trend towards higher private pharmacy consumption may be counter intuitive.

Upon closer inspection however, significant barriers to public pharmacies such as long waiting times (many times requiring all day waiting), and limited drug availability from the 'vital, essential and necessary' (VEN) list, many influence the heavy utilization of private pharmacies.

Even in the private sector, cost of drugs should not be a prevalent barrier, as government drug subsidy cards are available to the elderly and the chronically ill. Considering the high levels of subsidization provided by JADEP ($0.40US dispensing fee) and NHF (up to 75% cost subsidy), it may be fair to hypothesize that reports of a cost barrier may be due to either of two things. The first hypothesis is of low awareness and low uptake of these programs. The Jamaica Healthy Lifestyle Survey (JaStyle) found that 77% of persons had heard of NHF while only 36% had heard of JADEP. They further reported that 42% of persons 65-75 years of age are enrolled in NHF and 28.6% of this age group accessed JADEP, with women having higher utilization than men (Wilks, 2009). This data support the findings from the current survey which found that almost 40% of the elderly reported NHF enrollment, while 35% reported JADEP, with women having higher access. This uptake is quite disappointing, as 56% of the elderly still do not have either of these freely available drug subsidy cards. The JaStyle survey also found that apathy (13.9%) and ignorance (10.3%) of the programs to be major reasons for lack of uptake in the Jamaican population (Wilks, 2009). Focus groups held by both Nevins (2013), and Eldemire-Shearer (2009) reported elder complaints of the limited pharmacies accepting the JADEP drug card and the range of drugs available on the cards.

The second hypothesis for the high cost barrier to drugs is because of the availability of drugs. The availability of VEN list drugs poses problems in public health facilities and also in public pharmacies. This lack of availability may be compounded by the types of drugs covered by the NHF and JADEP health cards, thus resulting in high out-of-pocket payments from clients. Anti-histamines and drugs for thyroid, Alzheimer's and Parkinson's disease are not currently covered by either of the drug subsidy cards. The non-availability of drugs may explain why amongst persons who have NHF and JADEP, 26% and 25% respectively still reported drug purchase being a 'very difficult to impossible' exercise.

Data from the elderly study also points to persons with a higher SES (i.e. high education and use of private insurance) being more likely to access drug subsidy cards, with focus group discussions confirming this trend; a finding also supported by World Bank analysis (Chao, 2013). Nevins (2013) found that high SES persons all knew of the cards and all interested were able to access them. The group consensus was that the drug cards were good and cut their drug bills, but that many drugs were missing from the cards or were frequently unavailable, thus resulting in high out-of-pocket costs. One high SES female mentioned that: *"...the medication through NHF has helped with certain things. There are so many things [medications] that are not on it, and there are so many times you go for them [medications] and they don't have it."* Another participant reported: *"I am not happy because I'm getting a little [amount] of pension, and my medication bill is high, and NHF it is just special things that are covered"* (Nevins, 2013).

The lower SES focus groups indicated less access to drug cards, and even those with the cards indicated that their pensions (those who have it) were very small and as such they find it difficult to purchase their drugs. One group conversation between the moderator and participants is documented below:

Mod: So you saying medications are far more expensive [than in the 1980s]?

Elderly: Very, very!!

Elderly: Very, very expensive!

Mod: So what about NHF and JADEP?

Elderly: Well what them [pharmacists] do, is dem say whateva medicine you [get prescribed], dem say dat it no on it [the health card]

'Availability' may also be an issue due to the time limitations for refilling prescriptions. An in-depth interview undertaken by Bailey et al (2009) describes a highly educated woman with two elderly parents, who reports being confused and frustrated by the different rules and drugs covered by the various government health cards (NI-Gold, JADEP and NHF). This interviewee also indicated that of the 11 drugs her parents take, there are eight (8) different refill times which are inflexible on the drug subsidy cards, thus requiring multiple trips to the pharmacy where the computers/card swipe may not be functional.

Taking prescribed medications

A majority of respondents reported taking their prescription medications but it is possible that some social desirability bias may however have been included in responses. Those not taking their medications reported 'not needing it' as the major cause, followed by 'cost' and 'side effects'. This is in keeping with international literature that lists cost;

not needing medication/self-care; side effects; and convenience as common reasons for not filling prescriptions (Bender, 2002). Cost has been shown by other studies to result in persons either not filling their prescriptions or patients reducing the frequency or dose of their medications as a means of saving money (Taylor & Leitman, 2001). The non-cost related barriers may play a more significant than anticipated role, as studies show that reducing out-of pocket payments to zero will by itself result in little to no improvement in long term drug compliance. This points to the need for other 'non-cost' related barriers to be implemented in public pharmacies i.e. shorter wait times, increased drug availability, flexible re-fill times, and improved patient doctor communication of importance of compliance and of side effects.

Access to health insurance

Health insurance utilization was low (22%) amongst the elderly, and was primarily accessed through the private sector on an employer-employee basis. Health Insurance was most likely to be accessed by the middle-old; those who are/were married; and those with advanced levels of education. Beneficiaries were also more likely to have worked for the government in the formal labor sector, and have planned in advance for their retirement. Interestingly, drug subsidy cards were more likely to be accessed by those who already had health insurance, as opposed to the high risk-group without insurance, with this relationship remaining strong even after adjustment for demographic and disease status.

In trying to improve health outcomes and reduce costs to individuals and the government, health insurance access needs to aggressively tackled. This is especially urgent amongst those who are poorly educated and those who worked in the informal sector. These persons are likely to be of a low SES, thus putting them at an even higher

risk for poor outcomes that must be paid for by the government. Having a retirement planning service and/or mandatory pension contribution for all working age persons is vital. This will help persons to save and put plans into place to supplement their cost of living and health care expenses for the 20-25 years they may survive post retirement. Increased uptake of insurance will require long-term sensitization and awareness campaigns to change the cultural mindset of elderly and middle-age Jamaicans who consider their children to be their retirement plans; thus reducing their perception of the need for pension and insurance planning.

Access to devices/community services

With the exception of glasses, this population did not need much assistance in procuring devices of assistive living. This finding is in keeping with the low rates (7.3%) of functional impairment in this population (see manuscript 1). The only device that assistance was widely needed with was glasses. This need is of significant concern as sensory deficits may lead to the elderly restricting their activities, and may reduce their functionality and independence in the home and community. This deficit may be even more significant due to its association with falling, which increases pre-mature morbidity and mortality within this age group. In this study, a significant relationship was found between needing assistance with glasses and having fallen in the past six months (p=. 001). Considering the high mortality rates of hip fractures in the elderly, this implies the need for interventions to close this access gap.

Corrective lenses are not offered in the public sector; this is concerning as roughly 80% of persons glasses assistance had no health insurance to help defer costs. This points to the need for public and/or private interventions to reduce out-of pocket expenses for glasses and improved uptake of insurance amongst this cohort.

The need for community-based services was high (36%-60%) in this group, which may be reflective of both the activities of daily living (ADL) (7%), and the instrumental activities of daily living (IADL) (17%-23%) needs of this population (Chapter 2). The greatest needs were for ambulance and home health-care services, which point to high individual or health service barriers in accessing these services. FGDs point to the need for a home visiting program for the 'shut-ins', so as to attend to issues such as bed sores, dressings, and blood pressure checks. This need also includes support for caregivers, such as having someone relieve them for a few hours a week so as to facilitate them running errands. The cohort indicates that this service was once available in the public system and should be re-introduced. The moderately-high levels of IADL indicate a reduced ability to function effectively in the community and undertake 'higher cognitive and functional' tasks such as cooking and shopping for oneself. As such assisted living communities were suggested by upper SES respondents, with one respondent stating the need *"... to have some sort of community where you have supermarket assistance available, medical assistance available…with somebody like a nurse to check on you…so that you still have your privacy and everything at good reach"* (Nevins, 2013).

The alarming need for community-based services is expected to continue as the population ages. Eldemire-Shearer (2012b) urges individual and government action while there is still time to address these issues. She points out how changes in family structure

will affect the need for these services. The major changes include: i) greatly increased life expectancy resulting in the needs of the elderly needing to be met for longer periods of time; ii) the fertility rate has fallen dramatically thus leaving the elderly with fewer children to depend on in their old age for emotional, financial and physical support; and iii) urbanization has resulted in more nuclear families. Children, especially females, who would act as caregiver of ageing parents, now live greater distances away and are unable to provide the required care and assistance (Eldemire-Shearer, 2012b). These changes in the family pose significant issues for the management of a growing elderly population, who lack a cultural bias and understanding of retirement planning, but who will face reduced family support to help them manage on a day-to-day basis. The government and the private sector must decide how they will address this growing problem, and take steps during this demographic dividend to put appropriate services in place to fulfill these needs.

3.5 Conclusion

This document outlines an access and utilization profile that depicts the strengths and barriers to health services as faced by elderly Jamaicans. The major services that were reported as difficult to access were medical care and pharmacy services, while the barriers to access were primarily cost, waiting time, availability of services/supplies, and lack of health information/awareness. Health insurance and drug card uptake was very low, thus requiring aggressive policy actions to increase this health promoting behavior. This profile may be used by policy makers to improve the health outcomes of elderly Jamaicans.

3.6 References

Aday, L., & Andersen, R. (1974). A framework for the study of access to medical care. *Health Services Research,* 9(3), 208–220.

Andersen, R. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social behavior*, 36, 1-10.

Bailey, W., Gordon-Strachan, G., Lalta, S., Barnett, J., Henry-Lee, A., & Alleyne, D. (2009). *Case for selective user fees in health care: An examination of the issues related to user fees among vulnerable Jamaicans.* University of the West Indies, Sir Arthur Lewis Institute of Social and Economic Studies, Kingston, Jamaica.

Bender, B. (2002). Overcoming barriers to non-adherence in asthma treatment. *Journal of Allergy and Clinical Immunology,* 109(6), 554-559.

Chao, S. (2013). Jamaica's effort in improving universal access within fiscal constraints. *World Bank*. Retrieved from https://openknowledge.worldbank.org/handle/10986/13290.

Chen, M., & Lyttle, C. (1987). Ambulatory care and insurance coverage in an era of constraint. Chicago: University of Chicago, Center for Health Administration Studies.

Cloose, P., Allen, C., Alvarado, B., Zunzunegui, M., Simeon, & D., Eldemire-Shearer, D. (2010). 'Active ageing': A qualitative study in six Caribbean countries. *Ageing and Society*, 30, 79-101.

Comber, A., Brunsdon, C., & Radburn, R. (2011). A spatial analysis of variations in health access: Linking geography, socio-economic status and access perceptions. *International Journal of Health Geographics*, 10, 44.

Comino, E., Davies, G., Krastev, Y., Haas, M., Christi, B., Furler, J.,& Harris, M. (
2012). A systematic review of interventions to enhance access to best practice
primary health care for chronic disease management, prevention and episodic
care. *BMC Health Services Research*, 12, 415.

Eldemire-Shearer, D., & the Jamaican Team. (2004). Jamaica: INTRA 2 findings. Ageing
and Life course programme, WHO. Retrieved from
http://www.who.int/ageing/projects/intra/phase_two/alc_intra2_finalreport_jamaic
a.pdf

Eldemire–Shearer, D. (2008). Ageing: The response yesterday, today and tomorrow. *The
West Indian Medical Journal*, 57(6), 577-588.

Eldemire-Shearer, D., James, K., Nevins, D., Laws, H., Morris, C., & Willie, D (2011).
Project proposal : Study of older persons in Jamaica, 2011. Department of
Community Health and Psychiatry, University of the West Indies, Mona Jamaica.

Eldemire–Shearer, D. (2012b). New age challenges. *The Gleaner*. Retrieved from
http://jamaica-gleaner.com/gleaner/20121209/news/news94.html

Fitzpatrick, A., Powe, N., Cooper, L., Ives, D., & Robbins, J. (2004). Barriers to health
care access among the elderly and who perceives them. *American Journal of
Public Health*, 94(10), 1788-1794.

Goffe, D., & McCartney, T. (2008). Redesigning the health system in Jamaica: A proposal
(2008 update). Technical document, Ministry of Health Jamaica.

Higgs, G. (2005). A literature review of the use of GIS-based measures of access to health
care services. *Health Services & Outcomes Research Methodology,* 5, 119–139.

Lillie-Blanton, M., & Hoffman, C. (2005). The role of health insurance coverage in

      reducing racial/ethnic disparities in health care. *Health Affairs*, 24, 398–408.

McLaughlin, & C., Wyszewianski, L. (2002). Access to care: Remembering old lessons.

      Health Services Research, 37(6), 1441–1443.

Mona Ageing and Wellness Center (MAWC). (2011). Age friendly primary health care

      clinical toolkit. Retrieved from

      http://myspot.mona.uwi.edu/commhealth/sites/default/files/commhealth/uploads/c

      omplete-tool-kit.pdf

National Health Fund of Jamaica. (2010). Drugs for the elderly program. Retrieved from

      http://www.nhfjm.org/index.php/jadep.

Nemet, G. & Bailey, A. (2000). Distance and health care utilization among the rural

      elderly. *Social Science & Medicine*, 50, 1197-1208.

Nevins, D. (2013). Focus group discussions with the Jamaican elderly. Unpublished

      manuscript, Mona Ageing and Wellness Center.

Pan American Organization. (2012). *Health in the Americas. Country volume: Jamaica*.

      Retrieved from

      http://new.paho.org/saludenlasamericas/index.php?option=com_docman&task=do

      c_view&gid=136&Itemid=.

Parchman, M., & Culler, S. (1999). Preventable hospitalizations in primary care shortage

      areas. An analysis of vulnerable Medicare beneficiaries. *Archives of Family*

      Medicine, 8, 487–491.

Penchansky, R., & Thomas, J.W. (1981). The concept of access: Definition and

      relationship to consumer satisfaction. *Medical Care,* 19 (2), 127-140.

Rogers, A. (1997). Vulnerability, health and health care. *Journal of Advanced Nursing*, 26, 65-72.

Rust, G., Ye, J., Baltrus, P., Daniels, E., Adesunloye, B., & Fryer, G. (2008). Practical barriers to timely primary care access: Impact on adult use of emergency department services. *Archives of Internal Medicine*, 168(15), 1705-1710.

Planning Institute of Jamaica (PIOJ). (2010). *The Jamaica Survey of Living Conditions 2009.* Ministry of Finance and Planning.

Shi, L., & Stevens, G. (2010). Vulnerable populations in the United States. San Francisco, CA: Jossey-Bass.

Sox, C., Swartz, K., Burstin, H., & Brennan, T. (1998). Insurance or a regular physician: Which is the most powerful predictor of health care? *American Journal of Public Health,* 88 (3), 364–370.

Statistical Institute of Jamaica (STATIN). (2011). *Population and Housing Census 2011: General report, volume 1.* Retrieved from http://www.jis.gov.jm/pdf/General%20Report%20Census%202011%20Revised%20Copy%20Oct.%2019.pdf

Taylor, H., & Leitman, R. (2001). Out-of-pocket costs are a substantial barrier to prescription drug compliance. *Healthcare News*, 1(31). Retrieved from http://www.harrisinteractive.com/news/newsletters/healthnews/HI_HealthCareNews2001Vol1_iss32.pdf

United Nations. (n.d.). Global Issues: Ageing. Retrieved from http://www.un.org/en/globalissues/ageing/.

United Nations. (2002b). Madrid plan of action on ageing. Retrieved from

      http://www.un.org/ageing/documents/building_natl_capacity/guiding.pdf.

University of California Los Angeles (UCLA) School of Public health. (n.d.). Manual of

      C-Survey 2.0 software. Retrieved from

      http://www.ph.ucla.edu/epi/programs/csurvey2_manual.pdf

Weissman, J., Stern, R., Fielding, S., & Epstein, A. (1991). Delayed access to health care:

      Risk factors, reasons, and consequences. *Annals of Internal Medicine*, 144, 325-

      331.

Weissman, J., & Epstein, A. (1993). The insurance gap: Does it make a difference?

      Annual Review of Public Health,14, 243-270.

Wilks R. (2007). Hypertension in the Jamaican Population. A presentation to the Trinidad

      & Tobago National Consultation on Chronic Non-Communicable Diseases,

      September 2007. Available at

      http://www.health.gov.tt/documentlibrary/downloads/17/ProfRainfordWilks-

      JamaicaTT-CNCDs.pps

Wilks, R., Younger, N., Tulloch-Reid, M., McFarlene, S., & Francis, D. (2009). *The*

      Jamaica health and lifestyle survey 2007-2008. Retrieved from

      http://www.mona.uwi.edu/reports/health/JHLSII_final_may09.pdf

World Heath Organization. (n.d.). Steps in applying Probability Proportional to Size (PPS)

      and calculating Basic Probability Weights. Retrieved from

      http://www.who.int/tb/advisory_bodies/impact_measurement_taskforce/meetings/

      prevalence_survey/psws_probability_prop_size_bierrenbach.pdf

World Health Organization. (2000b). Health systems: Improving performance. *The World Health Report 2000*. Retrieved from http://www.who.int/whr/2000/en/whr00_en.pdf.

World Health Organization. (2002). Active ageing policy framework. Retrieved from http://whqlibdoc.who.int/hq/2002/who_nmh_nph_02.8.pdf.

World Health Organization. (2004a). Active ageing: Towards age friendly primary health care. Retrieved from http://whqlibdoc.who.int/publications/2004/9241592184.pdf

Zuvekas, S., & Weinick, R. (1999). Changes in access to care, 1977-1996: The role of health insurance. *Health Services Research*, 34, 271-279.

CHAPTER 4

POLICY BACKGROUND AND METHODLOGY

4.0 Overview

This chapter will focus on outlining international and national policy frameworks on ageing and primary healthcare that will be relevant in crafting strong elder-friendly primary health care (PHC) policies. These frameworks in conjunction with the health profile (i.e. chapter 2), and access/utilization profile (i.e. chapter 3) of the Jamaican elderly will be used as building blocks to develop policy recommendations. As a means of increasing the strength of the recommendations, systematic reviews and randomized controlled trials on i) PHC organization and delivery, and ii) chronic disease management, were utilized as appropriate. Finally, Ministry of Health, and expert consultations were also utilized to ensure applicability and feasibility of policies in the Jamaican setting. Altogether these documents serve to ensure increased access and improved health outcomes by maintaining: i) financial viability, ii) political feasibility, iii) relevance, and iv) sustainability of the policy recommendations. To increase likelihood of successful implementation, these documents were utilized within a theoretical framework (Matland's Conflict-Ambiguity Matrix) that addressed stakeholder conflict, and policy ambiguity as a means of improving policy implementation.

4.1 International Policy Frameworks

The demographic transition has garnered an increasingly strong international policy response over the past few decades. International policy recommendations developed by the United Nations (UN), and more specifically the World Health Organization (WHO) have attempted to tackle the challenges of the demographic transition. These recommendations serve as frameworks for member countries to develop context specific ageing policies at national and regional levels.

Current thinking and attitudes towards ageing builds to a large degree on the following principles and action plans:

- Vienna International Plan of Action

- UN Principles for Older Persons

- UN Proclamation on Ageing

- Madrid International Plan of Action on Ageing (MIPAA)

- Active Ageing approach

- Life Course approach

One landmark step to addressing the demographic transition was the first UN World Assembly on Ageing which was convened in Vienna, Austria in 1982. From this meeting came the sixty-two point '*Vienna International Plan of Action on Ageing'*, which addressed the basic components of life for the elderly such as nutrition, health, housing, and employment. It spoke to the need for, and the means of data collection to allow relevant information from this group to be incorporated into national policy strategies. In 1991, almost 10 years later, the Vienna plan of action provided a foundation for the development of the '*UN Principles for Older Persons'.* The UN principles were adopted

by the World Assembly in 1991, and called for governmental action on five key areas that affect the quality of life of the elderly, and for these governments to provide 18 key entitlements for the elderly populace. The five areas of action are as follows:

- Independence, including access to basic necessities, income and training

- Participation in the community and in developing relevant elder policies

- Care, allowing the maintenance of physical, mental and emotional well being

- Self-fulfillment through access to educational, cultural and spiritual resources

- Dignity to live a life free of exploitation and discrimination

In terms of health care, the UN Principles for Older Persons outlines that:

"...older persons should have access to health care to help them to maintain or regain the optimum level of physical, mental and emotional well-being and to prevent or delay the onset of illness"

(UN, 1999).

One year later, on the 10th anniversary of Vienna Plan, the UN General Assembly issued the '*UN Proclamation on Ageing'* that emphasized the need to embrace the previous two UN documents on ageing. The proclamation asserted that ageing must not be considered only in the later years of life but must be seen as occurring throughout one's lifetime. Consequently, relevant preparations and practices must be engaged early enough in life to lead to a positive 'old age' experience. In this proclamation the year1999 was declared as the 'International Year of Older Persons', and represented a means of celebrating 'humanity's demographic coming of age' with the theme being 'towards a society for all ages' (UN, 1992).

In 2002, the Vienna Plan of Action was revised and updated to develop the *'Madrid International Plan of Action on Ageing' (MIPAA)*; this plan of action was adopted at the UN Second World Assembly on Ageing, and was agreed upon by 159 governments. The major aim of MIPAA was to aid in the development of international policies for the elderly in the 21st century. The cornerstone of the Madrid Plan is the following: *"A society for all ages encompassing the goal of providing older persons with the opportunity to continue contributing to society… [while removing] whatever excludes or discriminates against them."* (UN, 2002b)

The Madrid Plan of Action on Ageing (MIPAA) greatly emphasizes the need for national-level focus on health promotion activities, and equal access health services for all people. The plan highlights the need for strong, national primary health care systems which provide continuous, community-based care which may prevent or delay the onset of chronic diseases and their complications throughout one's lifetime (UN, 2002b; WHO, 2004a). The plan encourages the provision of PHC services that are: i) integrated with other health and social areas; ii) readily available; iii) easily accessible; iv) comprehensive; v) efficient; and vi) age, gender and culturally responsive (UN, 2002b). Access to such PHC services was posited as being of critical importance if the elderly are to remain as valuable resources in their homes and wider communities.

A national review to assess the level of progress in enacting the principles and recommendations of the MIPAA is undertaken every five years and is spear headed by a relevant UN agency (in Jamaica's case this is the United Nations Population Fund (UNFPA)). This appraisal includes an assessment of existing policies, legislation, research and institutional arrangements to determine progress made in regards to the

elderly. The appraisal utilizes a strong participatory-review approach, ensuring to include and highlight the target audience (i.e. the elderly) in the appraisal process. The review of 2010 indicated that while progress has been made on ageing policies, the funds and mechanisms to actually implement these policies are lacking, and many health related areas including non communicable diseases (NCDs) and mental health management are in dire need of policy interventions (UNFPA & HelpAge, 2011). The UN/WHO initiatives for the elderly (including MIPAA) are grounded in two overarching principles; these are the concepts of the 'Life Course Approach' and that of 'Active Ageing'.

4.1.1 Life Course Approach

The life-course perspective is one of the major ideologies used by the WHO's Department of Non-Communicable Disease Prevention and Health Promotion (NPH) (WHO, 2002). This perspective proposes that diseases in older life are not only due to factors occurring in middle age, but are also due to the effects of risk factors from childhood or before birth. This approach to chronic diseases has been documented since the early half of the 20th century; in later years however, this approach was overshadowed by the 'life style' determinants model (WHO, 2001). The life course approach re-emerged in the 1980s however, with this being due to emerging supportive evidence from historical cohort studies, and ongoing birth and child–cohort studies. Such studies included birth cohorts from the United Kingdom, alumni studies in the United States, sub-population cohorts in various European states, and child cohorts from India, Jamaica and South Africa, amongst others (WHO, 2001).

There are two major theoretical models hypothesized to explain the life course pathway; these models are not mutually exclusive and may in fact co-exist alongside each other. The first model is a 'critical period' model which suggests that exposure to a risk factor during a critical period of development causes permanent and irreversible damage to organs and tissues, thus eventually causing disease (Kuh & Ben-Shlomo, 2002). The second model is that of 'accumulated risk', which suggests that risk factors at different stages in life will gradually accumulate to cause disease over time. This model may be expanded to suggest that risk factors at different stages of life are correlated with each other due to a 'trigger effect' which causes a clustering of risk factors. For example, exposure to poverty in childhood may be a trigger that leads to a cluster of other risky exposures such as poor nutrition, low immunity to disease, high absenteeism from school, and low literacy which may accumulate and trigger further risks in adolescence and adulthood such as poor nutritional habits and low employability) (Kuh & Ben-Shlomo, 2002).

In terms of NCDs, it is hypothesized that they may be initiated by risk factors at a single critical point, or through multiple accumulated risks during the life course, which results in a faster decline in functional capacity in old age (Stein & Moritz, 1999). The life course approach recognizes that behavioral, biological and psychological processes throughout one's lifetime (gestation, childhood, adolescence, young adulthood and mid-life) are important in determining health and wellbeing as individuals age (Kuh & Ben-Shlomo, 2002). Therefore to address the premature mortality and morbidity caused by NCDs, the determinants of health must be addressed throughout the individual's lifespan. This indicates a need for policies and interventions that seek not only to reduce risk

factors of the elderly, but also those of the young and middle-aged if accumulation of risks are to be minimized and a healthy transition throughout the life cycle is to occur. Due to the engendering of positive health attitudes throughout one's lifetime, the life course approach is seen as a means of promoting sustainable health and social outcomes for all generations (WHO, 2012).

The life course approach also emphasizes that elderly populations are not homogeneous and should not be addressed collectively. Instead, policy makers must acknowledge that as individual's age, heterogeneity increases and the needs of the cohort becomes highly individualized (WHO, 2002). This ideology is used to develop prevention and rehabilitation programs for the chronically ill and elderly, and is determined to be crucial in achieving additional health gains in older populations (WHO, 2012).

In summary, the life course approach may be characterized as possessing the following traits:

- Approaches disease through an interdisciplinary framework, that considers not only biological disease, but also the social determinants of health
- Allows integration of thought with other models such as the fetal origins and healthy lifestyle models
- Does not focus on any one stage of development but rather focuses on the entire life span and interplay of risks associated with various stages
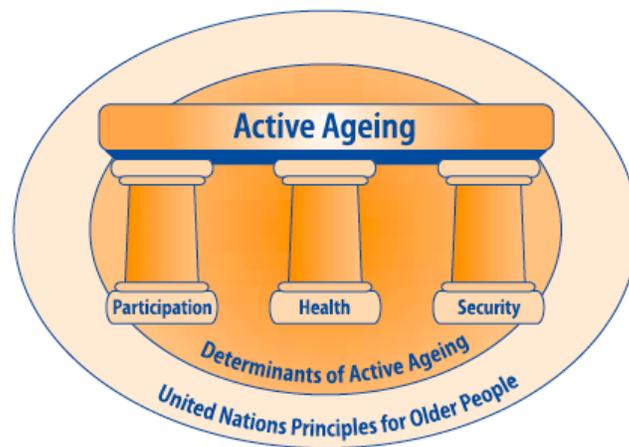 (WHO, 2000b)

4.1.2 Active Ageing

In addition to the life course approach, 'active ageing' is the other overarching principle that guides UN/WHO health policy recommendations. Active ageing is defined as a term adopted by the UN/WHO in the 1990s, but was officially launched at the Madrid convention in 2002. Active Ageing is the process of increasing opportunities for persons to participate in their homes and communities, and increase their health, security and overall quality of life as they age (WHO, 2002). The framework takes into consideration a comprehensive set of health determinants for the elderly population that include social; economic; environmental; personal; behavioral; and health sector determinants (WHO, 2002) (see Figure 4.1). These determinants are viewed as good predictors of how successfully individuals age, and must be viewed through gender and culturally sensitive lenses (WHO, 2012).

Source: WHO, 2002

Figure 4.1: The Determinants of Active Ageing

Based on the active ageing policy framework participation there are three 'pillars' that require policy action and should be focused on if active ageing is to be realized; these are participation, security and health. These pillars take into consideration the major determinants of healthy ageing (including the cross cutting determinants of gender and culture), and are grounded in the UN principles for older persons, and the life course approach (see Figure 1.12).

Source: WHO, 2002

Figure 1.12: The Three Pillars of Active Ageing

Within this framework the term 'active' means that in addition to improved physical ability, there is also increased participation in the labor market, and in civic and cultural activities as much as is desired by the individual. Interdependence between the elderly and their family/community members, and intergenerational solidarity are important tenets for the active ageing framework; it stresses the importance of the knowledge, skills and support that the elderly can provide the younger generations. Active ageing endorses a 'rights based' approach where the elderly are not passive targets

but are granted equal opportunity to participate in all decisions that affect them. Under these tenets, the retired, the functionally disabled, and the physically disabled must not be isolated from their natural environments but must be allowed to actively participate as much as they desire.

The 'participation' pillar speaks to the need for the elderly to have the freedom and ability to engage in formal and informal labor markets, and participate in social, cultural and political contexts as they deem relevant. The 'security' pillar refers to the ability of the elderly to be socially, physically and financially protected and able to maintain their dignity as they age. The final pillar of 'health' refers to interventions that allow persons to attain both quality and quantity of life. This involves reducing the risk factors for chronic disease and functional disabilities, while increasing preventive interventions; a major determinant of healthy ageing is access to PHC services throughout one's lifetime (WHO, 2002).

While embracing the various determinants and policy pillars of the active ageing framework, this study has explicit focus on the health pillar of the framework. Based on these and other recommendations, active ageing policies are thought to encourage the following:

- Reductions in the number of premature deaths (i.e. increase healthy life expectancy)

- Reductions in disabilities associated with chronic diseases in older age

- Increased autonomy and independence during the ageing process

- Development of age-friendly environs and services

- Increased numbers of people enjoying a high quality of life as they grow older

- Lower costs related to clinical treatment and services

  (Adapted from WHO, 2002)

In regards to health, the framework recommends numerous interventions to reduce the societal and individual consequences of ageing. As may be seen in table 4.1, these include increasing access to health promotion and preventive services; increased access to assistive devices; reorganizing the delivery of health services to be more gender and age sensitive; and improving the diagnosis and management of chronic diseases.

4.2 International Primary Health Care Frameworks

The MIPAA, along with the life course and active ageing approaches act as foundations for the development of cost effective elder policies. These frameworks stress the importance of PHC in accomplishing the goals of dignity, independence and care for all elderly persons. These frameworks also have a strong healthcare component, which aims to manage the expected increase in chronic ailments and disability, but more importantly to prevent/slow the occurrence of these events all together (UN, 2002b). In order to accomplish such a feat, access and utilization of high quality, integrated, continuous PHC is of tantamount importance. Additionally, PHC provides community based services which should increase accessibility and acceptability to the elderly and their care-givers.

PHC is therefore perfectly positioned to provide health promotion, disease prevention, and disease management to the elderly. These factors have resulted in PHC being associated with quality care, lower hospitalization rates, and lower mortality and morbidity (Starfield, Shi & Macinko, 2005).

Though PHC provides critical services needed for the elderly to maintain their independence and dignity as they age, these services are not always easily accessible to them due to specific health care delivery/organization factors (e.g. wait times, appointment process, opening hours), and due to individual factors (e.g. age and gender related factors, and perception of need) (Anderson & Aday, 1974; WHO, 2012). These barriers to care may manifest as low utilization by the elderly and represents a major problem in the prevention of poor health outcomes, and the reduction of social and financial costs in this population. As the 'backbone of health care system' which cares for the elderly, WHO supported adaptations being made in PHC facilities, so that they may better facilitate the elderly and the chronically ill, and reduce barriers to their care. Without aggressive actions being taken to modify PHC services to better cope with the growing needs of the population they serve, the societal costs of premature disability and deaths will negatively impact the development trajectory of many developing countries.

Based on extensive empirical research supported by qualitative experiences of the elderly and their care providers, and also through expert consultations, targeted frameworks were developed to help provide more integrated, better-organized and more patient-centered PHC for their population. Internationally modules include the Perth framework on age friendly PHC, the PAHO *Resolution CSP26.R20,* and the WHO PHC clinical toolkit. These will be discussed in the following sections.

Table 4.1: Key 'Active Ageing' Recommendations for Health

Re-organization of services	Access to services	NCD management	Affordability
• Organize services to ensure continuity of care including health promotion, disease prevention and provision of community support • Include informal care givers in health training programs and provide subsidies were possible • Provision of formal care givers in the home • Include active ageing principles in the educational curricula of all health students • Provide specializations in geriatrics and gerontology for health professionals	• Make effective screening services available/affordable • Increase access to cost-effective services e.g. cataract removal • Increase access to hearing aids, corrective lens and walkers • Provide access to rehabilitative services • Increase family support networks • Increase environmental accessibility to Age friendly health centers and public transport systems including wheel chair accessibility and large signage	• Increased attention to lifestyle factors e.g. smoking cessation, increased physical activities • Educate persons about the use of medications • Identify and correct culture and gender specific factors that affect adherence	• Increase affordability of essential drugs, especially for low income persons • Increase access to affordable, equitable PHC services

Developed from WHO, 2002

4.2.1 The Perth Framework for 'Age-friendly PHC'

The Perth framework was developed out of the MIPAA, and provides a set of guiding principles for the development of effective, age friendly, community-based PHC facilities. This framework is seen as age-sensitive approach to healthcare and reflects the perspectives, concerns and recommendations of both elderly patients and PHC health providers in six economically and culturally diverse countries. Countries studied include: Jamaica, Malaysia, Australia, Costa Rica, Canada and the Philippines. The framework encourages the provision of services that are acceptable to all health care users, and promotes community members being active, independent and productive for as long as is possible.

The three major areas of focus to increase active ageing are: i) training and educating health providers/care givers to be more sensitive and aware of the problems experienced by the older clients they serve; ii) increasing accessibility within PHC facilities; and iii) improving the organization and delivery of services to better fit the needs of the elderly (WHO, 2002; WHO, 2004a) (Table 4.2). Age-friendly health centers support equal access to care for all members of the society especially the elderly and as such embraces the slogan 'towards a society for all ages' (WHO, 2004a).

4.2.2 Age friendly PHC toolkit

In 2008, WHO's age-friendly PHC approach was expanded to include an '*Age-friendly PHC toolkit'* which supplements local and national guidelines, and sets the standard for elder care worldwide.

The toolkit provides practical, actionable suggestions and tools for the management and care of the elderly. Areas of focus include chronic diseases and the 'four giants' of geriatric medicine which are: memory loss, urinary incontinence, falls and depression.

Management tools included in this toolkit included evaluation forms, screening tools, flow charts, checklists and country guidelines. Modules covered in this toolkit included:

- Communication with older persons

- Age friendly Health Promotion

- Organization of services

- Age-friendly appointments

- Directory of community services for the elderly

- Referrals between PHC and hospitals

- Principles of universal design of health centers

In 2011, the Mona Ageing and Wellness Center (MAWC), a WHO collaborating body in Jamaica spearheaded the development of an '*Age friendly PHC clinical toolkit'*. This toolkit focuses on clinical assessment and management guidelines specific to the Caribbean and Jamaican context. Major clinical areas of focus were the geriatric giants, ADLs, and the two major chronic conditions associated with disability and reduced functionality, hypertension and diabetes. This country specific adaptation provides screening tools and algorithms that are easily integrated into the current PHC modus operandi in Jamaica. This toolkit was successfully piloted in a large urban health center (St. Jago Park Heath Center, St. Catherine), with plans underway to extend training on a phased basis to all PHC facilities.

4.2.3 The Pan American Health Organization 'Resolution CSP26.R20'

The PAHO 'Resolution CSP26.R20' was developed for Latin America and Caribbean subsequent to the roll-out of MIPAA, and supports activities associated with age-friendly PHC through both technical and financial support where feasible. The resolution supports member states embracing the following recommendations of age-friendly PHC:

- Increasing appropriate health promotion activities targeting the elderly

- Developing culturally and gender sensitive activities for the elderly

- Increase access of the elderly (especially the resource poor) to age-appropriate healthcare

- Train undergraduate and graduate level PHC workers in basic health promotion skills, gerontology and geriatrics

Increasing attention to the above mentioned areas may improve PHC services by increasing the integration of services; covering physical and also mental services; and by providing streamlined referral services to specialist, and social services (including the provision of basic necessities such as food, shelter and safety). The reorganization of services should increase focus on promotive, preventive and rehabilitative services rather than a focus on only curative services.

Table 4.2: Overarching WHO/PAHO Principles for Improving Primary Health Care for the Elderly

Organization/Delivery	Physical Accessibility	Education and training
Regular audits regarding the use of all drugs and other therapies, including traditional medicine and practices	Age-appropriate information on the workings of the PHC centers should be made available (such as opening hours and fees and schedules)	Ensure basic training in age, gender and culturally sensitive practices to deal with knowledge, attitudes and skills for all PHC workers
Modify existing administrative procedures to address the special needs of older persons	Apply the common principles of Universal Design to the PHC center whenever practical and affordable	The clinical staff of all PHCs should have at least basic training necessary for the management of the elderly
Ensure low income patients can access services	Provide safe, affordable and reliable transportation to PHC facilities	The elderly should be given information on health promotion, disease treatment and drugs which are age and gender appropriate as well as culturally acceptable
Ensure a continuum of care across the community level and linking the primary, secondary and tertiary care levels	Place simple and legible signage to simplify orientation of older persons	Ensure primary care health staff are aware of the increasing minor/major disabilities experienced by the elderly
Enhance continuity of care by ensuring good record-keeping across all care levels	Ensure key health care staff can be identified with name boards and name badges	Provide guidance on doing environmental audits to assess primary health care centers for their age-friendliness
Ensure the involvement of older persons in the decisions made regarding the organization of PHC	Provide PHC centers with acceptable lighting, non-slip floors, stable furniture and clear wheelchair accessible walkways	
	Ensure that the PHC environment, including restrooms and waiting areas, are clean and comfortable	

(Adopted from UN, 2002b; PAHO, 2002; WHO, 2002; WHO, 2004a)

Preventive services (primary, secondary, and tertiary) offered in PHC should include health education; self-efficacy building sessions (exercise classes, grocery tips); regularly scheduled check-ups; and systematic screenings. Incorporating such changes into the PHC system encourages increased respect for age and culture related factors that affect utilization of services, and may serve of increase compliance with prescribed regimes. These recommendations require technical and budgetary support from national agencies if they are to be successful.

4.3 National Policy Frameworks in Jamaica

In addition to the afore-mentioned international frameworks addressing the needs of the elderly, policy recommendations must also be congruous with the national vision and ministry-level action plans. Local health-related policies that must be considered include: i) Jamaica's 'Vision 2030'; ii) the ageing policies of the Ministry of Labor and Social Security (the National Council for Senior Citizens); and iii) the Ministry of Health's PHC renewal policy. These policies must be taken into consideration and incorporated into elder health policy recommendations if they are to be successful and gain stakeholder buy-in in the Jamaican context. Highlights of these local policies are presented in the following sections.

4.3.1 National Vision 2030

'Vision 2030' is the national development plan of Jamaica, and was developed to guide Jamaica to developed world status by the year 2030. Spearheaded by the Planning Institute of Jamaica, this plan has as its core, the vision that *'Jamaica, the place of choice to live, work, raise families and do business'.* Thirty-one task forces were tasked with developing sector specific plans, amongst which at least 2 include in their target

population the chronically ill and the elderly; these are the 'Health' and the 'Social Welfare and Vulnerable Groups' (SWVG) task forces. The SWVG task force was charged with developing a plan to ensure the provision of services at developed world standards for the vulnerable amongst us. It emphasizes that those who are unable to care for themselves will be supported through the means of the government of Jamaica. The vision for this sector is the provision of "A social welfare system that is responsive to the needs of the vulnerable population and contributes to maintaining human dignity".

The health task force on the other hand developed, a vision statement which supported *"Healthy lifestyles, in a healthy environment, producing healthy people".* The stance of the government has been to ensure that all Ministry-, and regional-level work-plans are in line with the national strategic plan, reflecting its mission and vision and working towards fulfilling its objectives.

4.3.2 Elderly policies in Jamaica

The Jamaican government has been a keen proponent of policies to address the needs of the elderly. Activities have been initiated to address the needs of this cohort by: i) forming a 'National Advisory Board' for policy and program development for the elderly as early as 1976; ii) training staff in the 1980s to implement national interventions 'to look after the welfare of seniors'; iii) adopting in 1997 a National Policy for Senior Citizens; iv) identifying the need for protection of vulnerable groups like the elderly in Vision 2030; and finally, v) the government is a signatory of the Madrid Plan of Action, and supports the PAHO resolutions to address ageing in LAC. These activities point to the interest and commitment of the government in developing and implementing elder sensitive policies island-wide.

The 1997 National Policy for Senior Citizens consists of nine key areas of focus, of which health was one such area. Much progress was achieved under this policy, especially under the areas of public education and media, national infrastructure, and social welfare. In terms of health however, the three major objectives of this policy were not widely implemented. These objectives include: i) promoting PHC programs (e.g. services for mental health, nutrition, dental health, increased physical activity, and the provision of essential drugs); ii) increasing physical and mental health maintenance and disease prevention; and iii) to ensure the availability, accessibility, and affordability of PHC to senior citizens. The strategies outlined to accomplish these objectives were the development of PHC policies to ensure appropriate care of the elderly; the facilitation of community-based programs; the provision of in-service training for Community Health Aids (CHAs) in the basics of elder care and in screening for early signs of impairment and disability; and the establishment of a technical aids supply for the elderly.

Though the health strategies of the national policy for senior citizens were not widely implemented, the government did make major strides in improving access to health in the elderly. Since then, the government has introduced drug assistance schemes (e.g. The Jamaica Drugs for the Elderly Program (JADEP) and the National Health Fund (NHF) cards) and a national coordinating body (the National Health Fund) to aid in the management of chronic diseases, which predominantly affect the elderly. Additionally, the Ministry of Labour and Social Security initiated a health insurance scheme for the elderly (National Insurance Gold (NI-Gold)), which is automatically provided to persons upon retiring. The major eligibility criteria for accessing this form of health insurance is having worked within the formal labor sector and having contributed to the pension fund.

Due to this eligibility criterion, and how new the law is, the NI-Gold program currently covers only 33% of the elderly cohort. Additionally, the government has provided universal access to health care by removing user fees form the public health sector, thus increasing access to all members of the Jamaica population.

Barriers to enacting the proposed health policy recommendations include the absence of a comprehensive, population sensitive PHC policy document to guide the actions of the health team. Other factors include severely limited resources within the health sector and several competing priorities, including emerging and re-emerging diseases such as malaria and HIV/AIDS. New health policies targeting the elderly must take these barriers into consideration to ensure successful implementation

4.3.3 MOH vision and PHC framework

The Ministry of Health (MOH) of Jamaica has responsibility for developing policies, standards, protocols and guidelines for the delivery of health care in the island. It sets the vision for the execution and implementation of programs by the Regional Health Authorities and by extension the 13 Health Departments. The mission statement of the Ministry of Health supports *"...empowering individuals and communities and ensuring access to adequate health care through the provision of cost-effective promotive, preventive, curative and rehabilitative services."* (Goffe and McCartney, 2008). Additionally, the MOH vision statement indicates the desire for *"...a health system that is client-centered and guarantees access to quality health care for every person in our population, at reasonable costs, and which takes into account the needs of the vulnerable among us."*

Based on its mission and vision, the MOH has invested heavily into developing a strong, community-based PHC system which reflects these characteristics; the PHC system was designed with these in mind, to be the foundation upon which the rest of the health sector was built. The history of a PHC system in Jamaica extends back to the 1970s when Jamaica was instrumental in crafting the Alma Atta declaration on primary health care (1978) and since then Jamaica has represented an exemplary model for the Caribbean region (Goffe & McCartney, 2008; Chao, 2013). In 2000, the WHO classified Jamaica as eighth in the world in regards to system efficiency at producing good health outcomes for a low cost, with much of this being attributed to the highly functional PHC system (WHO, 2000b; Goffe & McCartney, 2008; Chao, 2013).

Gains in health, and the strength of the PHC system are being 'severely challenged' due to: competing needs; extensively limited resources; reemerging infectious diseases; the rapidly increasing NCD burden; and a population that is ageing rapidly (Chao, 2013; Goffe & McCartney, 2008). Concurrent with these threats are significant human resource issues where staffing categories are outdated and urgent attention needs to be paid to identifying new and relevant categories of staff to provide PHC services (e.g. psychologist, physiotherapists, optometrists, and social workers). (Goffe & McCartney, 2008) Challenges to the health sector are occurring within the backdrop of a harsh economic climate that finds Jamaica having one of the highest GDP to debt ratios worldwide. Additionally, the country is undertaking structural adjustments due to recently accessed International Monetary Fund (IMF) loans which may see a shrinking of public services.

In an attempt to minimize any losses to the health status of the population, and in keeping with WHO mandates, the Ministry of Health (MoH) has redirected its efforts to reshape the health system in the country, with a special focus being place on strengthening PHC. The seminal document in regards to the health sector restructuring was prepared by Denise Goffe and Trevor McCartney (2008), and speaks to the need for system review and redesign based on the following symptoms of an ailing PHC system:

- Patients inappropriately by-passing health centers to visit hospitals for non-emergencies

- High utilization of private practitioners for ambulatory care (including by the poor and the vulnerable)

- The high numbers of people admitted to hospital with avoidable complications of non-communicable diseases i.e. ambulatory sensitive conditions

- Shortages of staff in key areas, particularly nursing and professions allied to medicine, along with a scarcity of other resources including vital and essential drugs

- High absenteeism as a consequence of unsatisfactory working conditions particularly in smaller health centers

Based on these issues, the restructuring of the PHC system is believed to be the most efficient means of maintaining/improving health. As such, the new re-structuring exercise aims to accomplish the following:

- Increased utilization of PHC

- Refocused efforts and resources on preventive/ promotive health

- Strengthening of PHC to manage specific conditions

- Training of health staff to acquire new skills

- Reduced professional isolation by providing specialist services in health centers

- Reduced hospital admissions for complications of:

  $\Rightarrow$ Diabetes and hypertension

  $\Rightarrow$ Conditions which can be managed on an outpatient basis

The reorganization of the health services will be based on an assessment of utilization indicators and population needs. One aim of this exercise will be to better redistribute health centers and pharmacies to better meet the community's needs and to operate in a more cost effective manner. For example, all health centers which receive 30 visits or less will be closed and the workload for that facility moved to the closest health center. Meanwhile, new health centers are proposed where need has been established. This policy indicates that the redistribution of services will be done within the context of ensuring that the service population will be within a 10km radius of the health facility. Based on this model and the objectives of this exercise, the new PHC structure will consist of four types of health centers instead of the current five categories. The changes will be as outlined in table 4.3 below.

Table 4.3: The Current and Proposed Health Center Categories in PHC in Jamaica

Current System	Proposed system
Type 1 & 2 Health Centers	Community Health Centers
Type 3 Health Center (outside of the parish capital)	District Health Centers
Type 3 & 4 Health Centers (in parish capital)	Parish Health Centers
Type 5 Health Center	Comprehensive Health Centers

'Community health centers' will represent a merger of type one and type two health centers, and will offer: non-curative care (Maternal and child health services (MCH), dressings, first aid); health promotion/education activities (including nutrition); community outreach; and home visits. These facilities will represent the closest contact point and interaction with the community, but will offer no curative services. These facilities will be expected to have an active community health committee, and an active health education program that includes sessions on the following:

- Practical health promotion activities

- Antenatal exercise

- Exercise for general fitness

- Elderly health issues

- Proper nutrition

Educational activities will be undertaken by one or two members of the clinic while community outreach and home visits are undertaken by the remaining staff members.

'District health centers' will be type three health centers which exist outside of the Parish capital, and will serve as the first point of entry into the health system for curative services. Non-specialist services that address common complaints will be offered at these facilities during regular working hours. In the event that specialist care is needed, patients will be referred to the closest 'Parish' or 'Comprehensive' health center which is found in more urban areas. District health centers will provide supervision for the smaller 'community' health centers, having the latitude to offer curative services in smaller health centers as the need arises and if resources are available.

'Comprehensive' and 'Parish' health centers will both offer a wide range of services, including specialist care on a regular but not daily basis. Both types of facilities will offer services during extended working hours (8am-8pm) so as to meet the needs of the working population. The major difference between these facilities is that Comprehensive health centers will be located in densely populated urban areas serving populations of greater than 60,000, while Parish health centers will be located in the parish capitals and will serve populations of between 30,000-60,000. Additionally, Parish health centers will house the parish administrative office.

Satellite clinics, dental clinics, and special family planning clinics will also be included in the delivery of PHC. Satellite clinics will be attached to community health centers and will operate on an occasional basis to provide MCH services based on the needs of the population being served. Dental clinics on the other hand will act as satellites for slightly lager health centers i.e. the District health centers, and will get supplies and staffing from these facilities. Finally, special non-governmental organizations (NGO) run Family Planning Clinics may be operate as satellites for District health centers.

In terms of pharmaceutical care, the restructuring of PHC aims for a reduction in the number of health centers that offer pharmaceutical services. This move is in an attempt to concentrate the limited pharmaceuticals to a few health centers. In addition to fewer pharmacies, the drugs on the PHC VEN list (Vital, Essential, and Necessary) is proposed to be decreased, thus reducing drugs offered free of cost to patients in PHC.

Since the development of the PHC renewal document, the NHF has taken-over the procurement and distribution of the public drug supply, and is now also in charge of operating pharmacies within the public sector. Based on this shift in roles and responsibilities, it is unclear as to the approach that will be taken in the next few years as it relates to provision of pharmaceuticals in the public sector.

Overall, the PHC renewal plan places emphasis on providing comprehensive care, with a focus on health promotion and education services. It also seeks to improve accommodation for its clients by offering more flexible opening hours, and the provision of specialist services on a regular basis. While these are important aspects of improving quality of care in PHC, a major critique of this proposed system is the contraction of pharmaceutical services. Reduced access to pharmaceutical services indicates that vulnerable patients (i.e. the elderly and the low income) will be less likely to access their medications in smaller facilities and would therefore need to travel to the larger health centers or to private pharmacies to access this service. Additionally, it is surprising that this proposal supports the lack of clinicians and nurse practitioners at community health centers, which are the facilities that are closest to rural areas and the most vulnerable populations. Such organization of services requires the local community to bypass these facilities in the event that any clinical services are needed.

Considering the high burden of patients at the larger facilities, and the MoH's stated desire to remove all barriers to accessing care by the most vulnerable, it may have been more appropriate to improve community health centers to be able to offer curative services at a minimum of once per week.

Finally, though this proposal states the need for incorporating new categories of staff into the health team, key PHC members such as physiotherapists and occupational therapists have not been included in the cadre of staff.

4.4 Methodology for Policy Development in Jamaica

This section will focus on the theoretical framework within which the elder-sensitive PHC recommendations will be crafted. It will outline how the international and national documents discussed previously in this section will be used to ensure the development of policies that are poised for successful implementation in the Jamaican context.

4.4.1 Matland's Conflict-Ambiguity framework for policy implementation

Policies developed to address the PHC needs of the elderly must be grounded in evidence, and should have practical and actionable directives that may easily be implemented in the field. The likelihood of successful implementation of public policies has been widely analyzed through the lens of either a top-down (macro-implementation) or a bottom-up approach (micro-implementation). Based on shortcomings of both of these approaches, Richard Matland's Conflict-Ambiguity Matrix for policy implementation was used as the theoretical framework to guide the development of implementable PHC policy recommendations.

The Conflict Ambiguity Matrix combines the areas of 'conflict' and 'ambiguity' which represents underlying themes in both the top-down and bottom-up models, but instead highlights them as being central to the implementation process. Both of these themes are particularly important in the Jamaican policy context, and as such this theoretical framework was deemed most appropriate for use.

'Conflict' as defined in this framework, refers to the absence of goal congruence, where major stakeholders do not share the same vision for the outcome of the policy, thus causing conflicts to arise during the implementation process. Conflict arises when one or more players have differing objectives for the project, and/or different views of what success entails. Conflict reduces the likelihood of successful policy implementation.

'Ambiguity' on the other hand refers to a lack of clarity in regards to policy goals or the means of accomplishing these goals. Matland posits that ambiguity of goals has a negative relationship with conflict. In fact, as ambiguity decreases, stakeholders will become more aware of the *"threats to their turf and act to limit the scope and range of [the] proposed policy changes to maintain existing patterns of bureaucratic power and structure"*(Matland, 1995). This indicates that ambiguous language in policy documents may sometimes be the smoothest means for policy adoption and implementation. Ambiguity may also refer to lack of clarity in regards to who, when, and how policies will be implemented. Such ambiguity is likely to make the monitoring and evaluation of activities and outcomes difficult. Implementation in these circumstances is dependent on local level players, and may result in lack of uniformity between project sites.

Based on the principles of conflict and ambiguity, Matland has provided a four quadrant matrix that highlights the characteristics of implementation with varying levels of these two variables (Table 4.4).

Table 4.4: Matland's Ambiguity-Conflict Matrix

	Low Conflict Administrative Implementation	High Conflict Political Implementation
Low Ambiguity	• goals are given and a means for problem solving is known • a central authority has the information, resources and sanction capability to enact the desired policy • implementation is hierarchically ordered with each link receiving orders from the level above • policy is spelled out explicitly at each level and there is agreement on responsibilities and tasks • relatively uniform outcomes at the micro-level across many sites	• there is conflict over both goals and means • the implementation process is a key arena for conflict • implementation outcomes are determined by the distribution of power • compliance is not automatically forthcoming • low ambiguity ensures that monitoring of compliance is relatively easy
High Ambiguity	Experimental Implementation • outcomes depend largely on which actors are involved • variation in outcomes from site to site • outcomes are hard to predict • opportunities for local entrepreneurs to create local policies • compliance monitoring mechanisms are of limited relevance • the policy may become a low priority	Symbolic Implementation • ostensibly implausible combination • salient symbols can produce high levels of conflict even when the policy is vague • outcomes will vary across sites • outcomes will depend upon the balance of local coalition strength • policy ambiguity makes it difficult to monitor activities

Source: Matland, 1995; Hudson, 2006

From this matrix it is evident that low conflict policies are highly likely to be implemented, as stakeholder agreement and unity of vision is high. Quadrant one (administrative implementation) of this matrix refers to low conflict policies with low ambiguity, and is seen as the best scenario for achieving successful implementation. In this situation, not only are stakeholders on board but goals, objectives, roles, responsibilities and funding sources are also clearly delineated in the policy document. Such a policy results in seamless implementation as long as resources are available. Contrary to quadrant 1, the least likely set of policies to be implemented are those of

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quadrant 4 (i.e. symbolic implementation). In these policies, both stakeholder conflict and policy ambiguity are high. Here the goals of stakeholders are so at odds with each other that even masking the policy in a cloud of ambiguity does not diffuse the conflict. Policy recommendations should avoid this combination of factors, if any hope for implementation is to exist.

4.4.2 Utilizing the Conflict-Ambiguity Matrix for policy development

Based on the Conflict-Ambiguity Matrix, the development of PHC policies for the elderly in Jamaica is likely to have successful implementation if stakeholder conflict and policy ambiguity are both minimized during this process. Conflict in this context will be reduced by framing policies within the context of already accepted national and international frameworks, and by maximizing political support. Political support will be tightly linked to the ability to implement programs without increasing the government's health budget significantly. Ambiguity, on the other hand will be reduced by incorporating policies into existing systems that are already clearly delineated. The following section looks at considerations taken to result in low conflict and ambiguity in the development and implementation of elder PHC policies.

Minimizing Conflict: National and international goal congruence

Policy recommendations developed through this document will seek to minimize conflict by working firmly within international frameworks, and national mission and strategic plans. Such goal congruence is supported by MoH recommendations that health policies possess the following characteristics:

- Embody and support the National and Ministry of Health mission and values

- Be consistent with national legislation and institutional statutes and regulations

- Be guided by international good practice

- Be clear, transparent and easily accessible

- Be enhanced by effective consultation and communication with relevant stakeholders

As outlined earlier in this chapter, the following international documents will be included in the policy development process:

- UN principles for older persons

- UN proclamation on Ageing

- Madrid International Plan of Action (includes active ageing and life course approaches)

- PERTH framework for PHC

- PHC clinical Toolkit (adapted for Jamaica and LAC)

- PAHO resolution *CSP26.R20*

National policies that will be included are:
- National Vision 2030

- MoH mission and vision

- PHC strengthening initiative

- Ministry of Health Family Health Manual

- Recommendations from the National Council for Senior Citizens

The recent initiative for the renewal and strengthening of PHC, intersects perfectly with the development of a national primary health care policy for the elderly. The re-design of PHC services allows for the needs of this cohort to be integrated into the planning and funding phases of this initiative, and allows the elder policies to be naturally rolled out as an integrated component of the new PHC system. This integration, along with the

authority of the Ministry of Health allows for widespread uptake and uniformity of implementation throughout the island. This system is likely to be more sustainable than policies that run parallel to the MOH.

Minimizing conflict: Financial viability

Competing financial agendas must be aggressively minimized if policy recommendations are to survive in the current fiscal climate. Based on Jamaica's ranking as having one of the highest gross domestic product (GDP) to debt ratios in the world, any new public program that requires significant financial investment is likely to be highly contentious. This is further complicated by the newly acquired 2013 IMF loan, which seeks to reduce public spending, and prevent the expansion of public services. Based on these factors, successful policies must be carefully crafted to ensure both short- and long-term benefits (especially those usually attributed to preventive care), but without significantly increasing the public budget. As such, the use/expansion of interventions that already have mechanisms, legal frameworks, stakeholder relationships, and staff in place will help to minimize both direct and indirect costs, and thus conflict associated with new recommendations. Integrating new policies into pre-existing frameworks will likely protect them from being eliminated, as compared to developing new interventions that must be devised and implemented from conception. The protective factor provided by integration into already operational programs will be especially crucial in the event that austere cost-saving measures are implemented in the health sector.

Minimizing conflict: Political support

The demographic dividend occurs as birth rates fall, thus resulting in an age structure where there are more members of the working population compared to other age groups (Singaria, 2012); Jamaica is currently experiencing such a dividend (Eldemire-Shearer, 2008). This opportunity speaks to the need for elderly policies to be put in place while the young and middle-aged populations are still large enough to help build the economy, and to help provide social security for future generations (Eldemire-Shearer, 2008). The threat of being unprepared for the demographic shift is a significant one facing the Jamaican populace, and sets the stage for political unity and support from both the fiscal conservatives and the liberals.

Additionally, the ageing population has become increasing publicized and politicized as individuals and families begin to face the social, physical, and financial consequences of ageing. It is becoming increasingly evident that what has and is being done is insufficient to address and remedy the health concerns of the ageing phenomenon. PHC is a cost effective means of improving elder health and allowing the elderly to remain independent and productive for longer periods of time. Within the context of a contracted economy integrating elder health policies into a proven cost effective method of health care delivery that is already budgeted for, is a politically sound approach.

Simultaneously, such policies allow for the fulfillment of key aspects of the MIPAA agreement, which calls for the development of elder-sensitive policies in health. These factors make the tackling of the ageing problem a worthy priority for both political parties to support.

Based on this discussion, the following summarizes the conflict-minimizing strengths of the proposed method of policy development:

- In line with MoH and international frameworks which stakeholders have already agreed to, and have been operating under

- Can be seamlessly integrated in the new PHC system

- Utilizes a financially viable method of addressing the health problems of this cohort i.e. integration into currently existing frameworks

- Low financial burden; unlikely to interfere with IMF arrangements

- Time is still available for aggressive action to be taken to curtail the negative effects of the ageing population

- Any additional costs to improve services for the elderly will also prove beneficial for other generations

- Ageing touches and affects almost everyone, whether personally or through family ties, thus limiting the resistance faced by non-ageing coalition groups

- Addresses the widely accepted threat of population ageing

Minimizing Ambiguity

While the policy recommendations of this document are likely to result in low stakeholder conflict, the question of ambiguity still exits. In order to increase the ease and likelihood of implementation, ambiguity must be minimized where possible. This will be done by incorporating the policy into already functional MoH systems where roles, responsibilities, and funding resources are already clearly delineated. Though the RHAs have flexibility in the implementation of MoH policies, they are held accountable for policy outcomes by the MoH. Accountability is maintained through a Service Level

Agreement, and through the submission of annual reports and action plans to the MOH. Funding and penalizing mechanisms are in place to address the non-fulfillment of policy goals and objectives. As such recommendations that are designed to be clear and unambiguous at central level are likely to result in widespread adaptation with high levels of fidelity being maintained at implementation sites.

Based on Matland's matrix, policies implemented via the proposed route will therefore likely be in quadrant 1 i.e. low conflict, low ambiguity (administrative implementation). This process tends to be a simple administrative process where the policy will be successfully implemented as long as resources are made available for implementation.

4.4.3 Underpinning principles and values for developing elderly health policies

In addition to issues of conflict and ambiguity, the development of policies for the elderly must also consider the special characteristics of this cohort. As outlined by the Ministry of Health's Family Health Manual (2011), and the Mona Ageing and Wellness Center (2011), some overarching principles to be considered are as follows:

- The clinical picture seen in the elderly may not be the same as in younger populations
- Lack of reserve capacities may result in earlier presentation of disease
- Though disease presents earlier, the elderly tend to present at a later stage for health care
- All levels of prevention are effective in the elderly, with small interventions producing dramatic impacts on overall health

- The impact of prevention points to the need for annual exams that focus not only on physical health but should also include functional and cognitive assessments, as well as social support assessments

Characteristics that must also be considered at the site of program administration include:

- Multiple pathologies are common in the elderly

- Poly pharmacy may be common due to taking multiple drugs, for multiple conditions

- There is a cultural acceptance of aches and pains as being unavoidable and due to old age

- The need for lengthier consultations with health practitioners

- Communication with providers may be limited due to sensory impairments (vision or hearing); cognitive impairment (Alzheimer's); mental impairment (depression); generational gaps; and literacy issues

- There is reduced peripheral sensitivity amongst the elderly

- There is fear/denial of need for hospitalization

Finally, elder-sensitive recommendations for PHC are likely to work in the Jamaican context as similar strategies (i.e. baby-friendly initiative), have been tried and found extremely successful in this setting. The baby friendly strategy, a WHO/UNICEF initiative was adopted by Jamaica in 1996, and promoted the breast feeding of infants and children up to two years of age. It also supported the development of health care policies to encourage and protect the health of infants, and to make healthcare more accessible to mother and infant care. The adoption of this strategy has been widely successful, with the MCH program being one of the strongest in PHC today. Based on the impact of this push

to protect infants and young children, the hope and anticipation is that similar levels of acceptance and support will be engendered for the age-friendly recommendations being proposed for PHC.

4.5 Conclusion

The methodology outlined in this section involves utilizing national and international frameworks that Jamaica has committed to; data from chapters 2 and 3; and systematic reviews to formulate PHC recommendations for the elderly.

These recommendations must maintain low political/stakeholder conflict, while being clear and precise if they are to be successful in the current economic climate. Successful policies must increase access and provide benefits without significantly increasing the public budget or violating IMF recommendations.

As such, the use/expansion of interventions that already have mechanisms; legal frameworks; stakeholder relationships; and staff in place will help to minimize costs. This will serve to increase the likelihood of successful and sustainable implementation of policy recommendations. Recommendations outlined in the next chapter will seek to fulfill the criteria of i) financial viability, ii) political feasibility, iii) relevance, and iv) sustainability.

CHAPTER 5

PRIMARY HEALTH CARE RECOMMENDATIONS FOR THE ELDERLY

5.0 Overview

Primary Health Care (PHC) is crucial in addressing the health needs of the ever-expanding elderly population. It provides a cost-effective means of improving quality of life, and premature morbidity outcomes amongst the elderly, allowing them to maintain their independence and dignity, and to continue contributing both formally and informally to their families and communities (United Nations (UN), 2002b; WHO 2012). Even though the elderly have on average a higher need for continuous and frequent contact with health services, they tend to have lower access as compared to younger populations (Xu, 2010). This produces significant gaps in maintaining the health of this vulnerable population.

The absence of a PHC policy document specific to the needs of elderly Jamaicans hinders the ability of policy makers to target resources and interventions to address the distinct issues facing this cohort, and to address barriers to their accessing PHC services. The absence of such a document also limits the systematic development and implementation of age friendly PHC policies, and hinders the fulfillment of international obligations on ageing such as that of the Madrid International Plan of Action on Ageing (MIPAA).

Without a policy framework to elucidate the need for various age-related interventions targeting the prevention, diagnosis and management of disease in the elderly, it is unlikely that improved outcomes will be achieved expediently, and in the most cost effective way possible.

This document consequently aims to provide PHC policy recommendations to the Ministry of Health (MoH) and allied agencies that may serve to improve the compression of morbidity amongst the elderly and reduce pre mature mortality. International and national frameworks for effective PHC services for the general population, and specifically for the elderly, have been utilized in the development of this document (see methodology in chapter 4, section 4.4). The major sources of information include:

- Health profile of the Jamaican elderly (Chapter 2)

- Health care access and utilization pattern of the Jamaican elderly (Chapter 3)

- International frameworks (e.g. MIPAA; Active Ageing; Perth Framework; and PAHO Resolution *CSP26.R20*)

- National frameworks (e.g. National Vision 2030; Family Health Manual; the PHC renewal protocol; age-friendly PHC clinical toolkit)

- Systematic Reviews and randomized controlled trials (RCTs) of PHC and elder health related interventions

Altogether these documents serve to develop policy recommendations that improve elder access and health outcomes by ensuring: i) financial viability, ii) political feasibility, iii) relevance, and iv) sustainability of the policy recommendations. Specifically, recommendations will target: i) cost barriers faced by clients; ii) the organization and

delivery of health services; iii) training of formal and informal caregivers; iv) physical accommodation of facilities and homes; v) pharmaceutical services; and v) chronic disease management (Graph 5.1). Recommendations are intended to be practical and applicable in the Jamaican setting, and by extension other developing countries faced with similar constraints. Recommendations were also designed for ease of integration into the existing PHC system, with every effort being made to be cognizant of the strained financial environment within which new policies must survive.

Graph 5.1: Flowchart of PHC policy recommendations
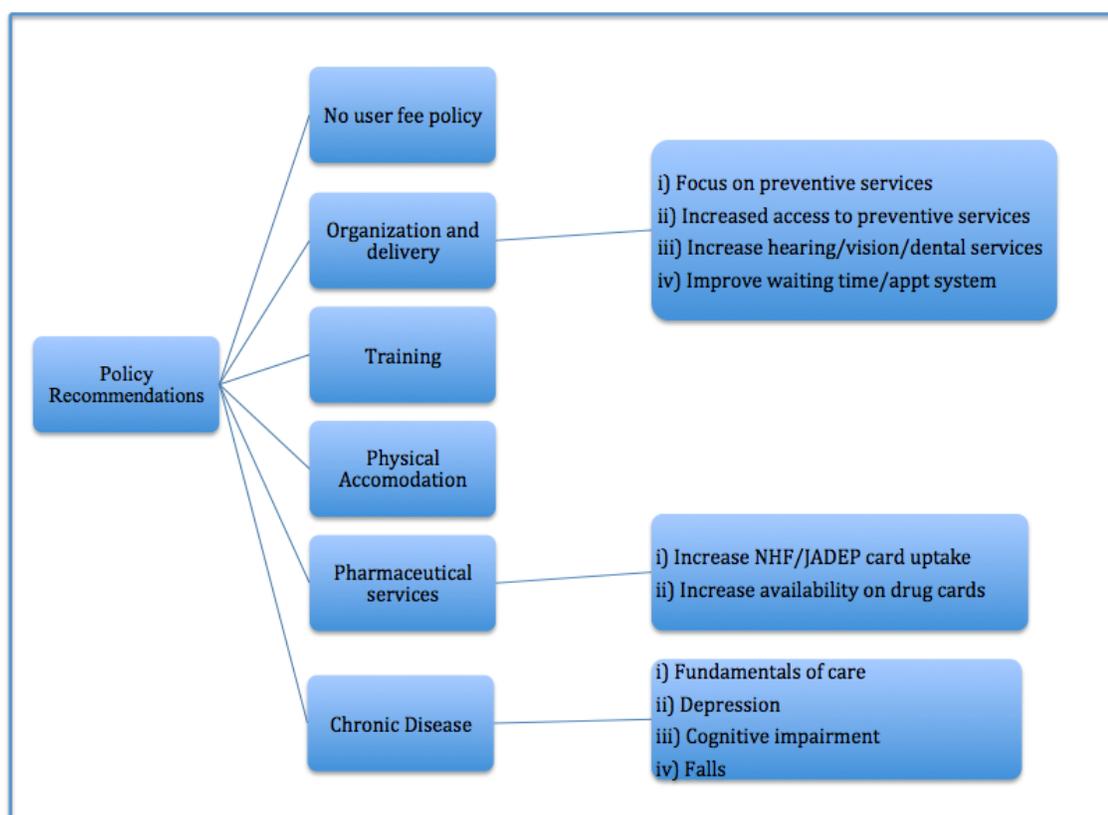
5.1 Recommendations for the 'No User Fee' Policy

One of the major barriers to medical care as reported by this cohort was the high out-of-pocket costs associated with accessing services. This barrier persists in spite of the elimination of user fees from the public health system in 2008. The extensive reports of paying for public services (43%) in this cohort has been hypothesized as being due to: i) extensive interplay with the private sector due to low availability of services in public settings; or more ominously, ii) it may be due to an accurate reflection of breaches in the execution of this 'no user fee' policy.

While the later scenario has not been identified by government technical reports nor health system studies undertaken since 2008, the numerous reports of public sector payments warrants some action by the Ministry of Health (MoH). It is recommended that the MoH undertake stakeholder audits to assess the validity of these claims; assessments may include the use of 'mystery patients', or exit interviews to ascertain if and what services are being charged for in government facilities. If any such breach is identified, penalizing actions must be taken with the offending officers, and with the Health Department and Regional Health Authority (RHA) that has supervisory responsibilities for these facilities. Depending on the prevalence of non-compliance identified, a temporary MoH task force may be needed to receive and address consumer reports in regards to violations of this law. Further sensitization of health providers and clients may also be warranted under these conditions.

5.2 Recommendations for Organization and Delivery of Services

The widely acclaimed Andersen-Aday 'access and utilization' model highlights the population-level organization and delivery of health services as being an enabling factor for good outcomes (Andersen & Aday, 1974). The model hypothesizes that once health facilities organize and deliver services in line with clients' needs (both real and perceived), then access will increase, and will result in improved utilization of health care and improved health outcomes. Organization and delivery factors that must be considered include the types and frequency of services that are available, and the accommodation of the client's biological, emotional and financial needs. The policy recommendations of this section will seek to address these factors by focusing on the following: i) increased focus on preventive services; ii) increased availability of services within the public sector; iii) reducing waiting times to access services, and iv) reducing competition to get a doctor's appointment.

5.2.1 Focus on preventive rather than acute care

PHC in its normative state provides interdisciplinary, and integrated care that places great emphasis on health education, and disease prevention rather than a focus on acute, or episodic care (WHO, 2004a; WHO, 2002; Pelaez & Rice, 2004). Within such a model, PHC is a cost-effective means of improving health outcomes and reducing costs associated with disease complications, and the treatment of ambulatory sensitive conditions such as asthma and diabetes in secondary care.

In the elderly population where maximizing functionality is a major goal, secondary and tertiary prevention must be capitalized upon to reap these benefits. The benefits of prevention in the elderly are many times missed due to the 'negative ageing

paradigm' found in many societies (Eldemire-Shearer, 2009). This paradigm promotes the concept that ageing and poor health are inextricably linked, and as such any disease prevention activity targeting this cohort is likely to produce little effect. The WHO's model of healthy and active ageing rejects this theory, and supports the ideology that prevention is helpful at any point during the life course. In fact, all levels of prevention are effective in the elderly, with small interventions producing dramatic impacts on overall health; dysfunction may therefore be prevented or even reversed by the use of targeted prevention interventions. This paradigm shift is reflected in WHO/PAHO recommendations and policies developed to address elder health. These healthy ageing recommendations address not only chronic diseases, but also cognitive, metal health, incontinence and fall associated conditions. These conditions are seen as preventable, or the disease course modifiable by early intervention. Such prevention measures will allow the elderly to remain healthy and independent for longer periods of times, as morbidity will be compressed into the shortest timespan possible.

Target groups for prevention

In this study population, the highest disease burden was on average in women, and increased with age; this points to the need for targeted prevention interventions in these groups. In this study, men had a self-reported diabetes prevalence of almost 20% while women reported a prevalence of over 32%; the same held true for hypertension, where men reported almost a 50% prevalence while women reported over 70% prevalence. While it is possible that women really do have more disease than men (i.e. due to lifestyle differences), another likelihood is that men simply do not visit PHC frequently enough for primary and secondary prevention (e.g. health education and

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screening) and disease diagnosis to occur. The theory of low PHC uptake by men is supported by evidence from focus group discussions by Eldemire-Shearer, 2011, and Nevins 2013. This points to the need for more aggressive measures to get men into health centers and to uptake preventive services.

In terms of age, disease burden was on average significantly higher in the old-old (i.e. the over 80); the young-old still had a fair share of disease burden however. For example, 41% of young-old men (i.e. 60-69 years) and 70% of young-old women reported already having hypertension. This indicates the need for aggressive measures should be undertaken throughout the life course to prevent disease, rather than waiting until old-age and disease diagnosis to initiate healthy behaviors. The young and the middle aged PHC clients must be encouraged to adopt healthy lifestyles such as increasing physical activity, healthy eating and smoking cessation so as to prevent disease later on in life. Generally as populations age, the focus of prevention gradually shifts from primary prevention (e.g. health education) to tertiary prevention (e.g. prevention of diabetic amputations), however if primary and secondary prevention is stressed, then this such limit the need for significant amounts of tertiary prevention in this population, thus leading to 'positive ageing'.

Perceptions of preventive care (care givers and the elderly)

The WHO study, 'Integrated health care systems response to rapid populations ageing in developing countries' (INTRA), was undertaken in Jamaica to assess barriers to delivering PHC to the elderly. The focus group discussions held as a part of this study highlighted two key areas of 'negative ageing' operating in the PHC system of Jamaica. Firstly, 'negative ageing' attitudes were found amongst the elderly themselves who failed

to recognize the importance or value of preventive care and social determinants of health. Rather they believed health was due to spiritual favor with God (Eldemire Shearer, 2009) and could be prevented or modified by herbal remedies alone (Nevins, 2013). Secondly, 'negative ageing' principles were expressed by health staff themselves, who stated that it was too late for the elderly to practice healthy lifestyles as the 'damage has already been done'. Staff also expressed doubt in the elderly's ability to change their lifestyles, and to embrace healthy activities such as exercising and eating healthily, stating that the elders were 'miserable, difficult and set in their ways'. Over 30% of nurses and 49% of community health aids (CHAs) believed prevention that required change on the part of the patient was unlikely.

Based on these findings, it is evident that a reorientation of the health system is needed to place a greater emphasis on primary, secondary and tertiary prevention, especially for the elderly. This re-orientation, may be encouraged through elder sensitive PHC policies that include strong prevention components; staff must also be held accountable to implementing and enforcing these programs. Training (as outlined in other sections), will be crucial for the change of mindset to occur amongst the elderly and healthcare workers.

5.2.2 Increasing availability of preventive services in public sector

The high reports of 'cost' barriers to care may be due to heavy patient utilization of the private sector, due of the limited or non-availability of certain services within the government system. Preventive services are of particular concern as even though such services have been shown to be a cost effective means of preventing and improving health concerns (Center for Disease Control and Prevention (CDC), 2010), many of these

services are not widely available in government clinics. This problem persists in spite of MoH guidelines that promote regular provision of these services to clients. On average however, only 9%-35% of the study cohort reported having had key preventive services in the last year, with significantly more persons indicating they had accessed these services privately. This points to the need for sensitization campaigns to educate the population and also health providers of the need for preventive services in this age group, and also points to the need for the government to increase access to these services.

While upfront costs may be high to provide these services, the theory of prevention indicates that long-term benefits such as reduced hospitalization and institutionalization, and increased availability of formal and informal labor sources (e.g. expert consultations, babysitting grandchildren) will exceed associated costs. Preventive services are also important within the context that less than 23% of the elderly reported having health insurance, with these being the wealthier, more educated members of the population.

The need for government intervention to provide both sensitization campaigns and increased access to preventive services especially to the uninsured 77% is extremely important. This sub-cohort is unlikely to value, and be able to afford preventive care in the private sector, and unfortunately are least likely to be able to manage the long term expenses associated with late-stage disease detection. This places further strain on government services such as secondary care in rural areas. Here patients may remain in hospital instead of going home or being institutionalized because of the family's inability to manage the financial burden associated with the disease; this leaves the patient inappropriately occupying bed space and expensive nursing time. Other government

resources that will be taxed by high demand by the sick elderly include the various 'hardship funds' created by the government. Keeping the elderly population (especially the massive uninsured population) able to work and out of hospitals, for as long as possible must therefore be a major goal of the health ministry.

In order to minimize the costs associated with preventive service uptake, and to subsequently increase access and uptake of such services, it is recommended that the government explores options for addressing the issue. Feasible options may include: i) outsourcing of services, and ii) cost-sharing mechanisms. These options are likely to be cheaper and more feasible for the government than employing staff, sourcing supplies, and finding physical space to house and provide these services themselves. Additionally, outsourcing is already widely used in the government system and mechanisms are already in place to engage providers and to ensure quality of service provided. The pre-existence of mechanisms also reduces initial start-up costs and time that is usually associated with outsourcing activities.

Before deciding on which preventive services to offer however, considerations about iatrogenesis and the risks associated with screening should be assessed. **A cost-effectiveness analysis should also be undertaken to determine which preventive services should be covered and whether the services should be subsidized for all members of the population, or only for the 60 year and over age group.** Services to be considered under this system should include mammography, optical services, dental services (especially dentures), and vaccinations (e.g. the pneumococcal vaccine which is MoH recommended for the elderly every three years, and the annual flu vaccine which is recommended annually).

Outsourcing of services

Outsourcing to agencies better able to provide key services is one measure to address lack of services within the public sector and the out-of-pocket costs associated with having to access these services privately. Outsourcing is currently used by the government to provide crucial services that it deems too expensive to offer itself; this may be due to constraints in regards to human resources, purchase and maintenance of equipment, and physical space for the service. Outsourcing may be done through formalized relationships between the government and NGOs/private suppliers who already provide the required service in a cost effective way. Such relationships would allow for a seamless transition of patients from the public sector into the NGO/private system, and would allow for closer, more coordinated follow-up of clients. This may be done through a case manager who is assigned to ensure that patients have received the service; that results are reported back to relevant health centers; and that patient follow-up is coordinated between the facilities. This model may be used with non-governmental organizations (NGOs) who already offer services at a below market rate, such as the Jamaica Cancer Society, the Diabetes Association of Jamaica, and the Jamaica Heart Association.

Under the outsourcing system, public patients would either be offered the service/s free of cost, or at a subsidized rate. The government should consider covering/subsidizing the provision of service/s by offering tax breaks or import duty concessions to the provider. Similar models of service delivery currently exist between the MoH/RHAs and various specialist testing facilities; these are generally for secondary care services that the government has previously agreed to deliver but have found

themselves unable to do so in a continuous and /or cost-effective manner. The mechanisms in place to undertake such activities should be extended to include the delivery of key preventive services in PHC. This may prove beneficial and cheaper for the government in the long term, as this is likely to reduce the burden placed on secondary care facilities due to complications arising from the late detection of disease. The formalization of outsourcing relationships will also make accessing preventive services cheaper and less convoluted for patients, and will facilitate a more integrated, coordinated approach to care.

Cost sharing mechanisms

In addition to the outsourcing of services, a cost-sharing relationship between patients and the government should also be explored. Under a cost sharing system, the patient will be allowed to access pre-approved services by private or NGO providers, with the government providing a flat rate subsidization for the service provided. Such activities would be beneficial in increasing uptake of preventive services in both public and private patients, and may also act as an incentive for health providers to promote preventive care.

The cost sharing relationship may operate through the National Health Fund (NHF), using the mechanism already in place to subsidize drugs and key procedures such as the HbA1c tests for diabetics. The value of the subsidy provided would be determined by a similar method as used by the NHF, which is determining the lowest market value for the active ingredient in the drug, and then subsidizing 80% of that reference value. For the NHF, this usually translates to a subsidy of between 47%-75% of the retail cost of the drug (NHF, 2009; Chao, 2013). In terms of subsidizing preventive services, it may be

best to identify the lowest market value of the service, and based on how prohibitive the cost of the service is, set a standard subsidization rate for each particular service. For seamless implementation, this benefit should be offered as an additional service on the NHF drug card, as the mechanisms are already well established to offer such subsidies to private providers, and to ensure financial viability through stringent NHF budgeting practices (Chao, 2013). Considerations are currently underway for the government to allocate a special tax on gasoline to the NHF as a means of increasing its provision of benefits. This may be one way of financing this subsidy of preventive services.

5.2.3 Increasing availability of vision, dental and hearing services

Availability of health services targeting vision, dental and hearing should also be available to the elderly population as these services directly affect short- and long- term outcomes. Such problems reduce the ability for the elderly to accurately assess and maneuver in their environments, thus leading to potentially debilitating falls and/or restriction of activities. The high prevalence of self-reported poor vision (33%) is worrying in this population, as late-age visual impairment is associated with depression, reduced activities of daily living (ADL) and instrumental activities of daily living (IADL) functionality, and social isolation (Bookwala, 2011; Laforge, 1992). This is compounded by the 46% of the elderly reporting the need for assistance to access glasses to aid their vision. Poor dental health on the other hand is a risk factor for heart disease, and may also reduce the ability of the elderly having proper nutrition, and social interaction.

Based on the importance of sensory health, PHC must play an important role in providing accessible, routine assessment for sensory declines and intervening to reduce permanent disability. Since opticians/ophthalmologists are not currently employed to

PHC, it may be important to engage ophthalmologists from the major public hospitals to undertake specialist clinics in PHC. This may be done on 'chronic disease day' as a large target audience would already be present, and this would provide a convenient and integrated approach to managing chronically ill patients. These specialists will be helpful in not only determining the need for corrective lenses but also in the early detection and referral of patients for cataract and glaucoma surgery. These specialist clinics should be offered on a regular basis at the type 4 and type 5 facilities, and occasionally offered as 'satellite clinics' in smaller, rural health centers. Specialist and satellite clinics are already included in the MoH's plans for renewing PHC, and so implementation and execution of such specialist/satellite clinics should be a straight-forward process.

In terms of accessing glasses and other assistive devices (such as wheelchairs, and walking canes), which are costly in the private sector, a model similar to that used by the local NGO 'Foundation for International Self Help' (FISH) may be used by the government. Under this model, the general population, NGOs, and faith based organizations (FBOs) would be asked to donate lightly-used devices which could then be sold at a substantially lower than market value cost to patients. The option of renting instead of selling larger devices such as wheelchairs should also be considered.

The provision of glasses may also be undertaken through relationships the MoH currently has with eye health NGOs. These include but are not limited to: i) the Caribbean Council for the Blind and the Foundation for Eye Care in the Caribbean (CCB-Eye Care Caribbean), and ii) the Miracle Eye Care program (aka the Cuban Eye Project). The MoH works with these agencies to provide widespread cataract and glaucoma surgery at key areas island-wide, and presents opportunities to explore the provision of

glasses to vulnerable Jamaicans. Additionally, a new relationship should be formed with the Lions Club International and the Jamaican government/MoH. The Lions Club has as one of its major mandates, to prevent blindness, restore eyesight, and improve eye health worldwide. The organization operates eye glasses recycling centers (similar to FISH) where persons can drop of old glasses; these glasses are then cleaned, sorted by prescription strength, packaged, and then distributed to the needy (Lions Club, n.d.). Considering the very active nature of the Lions Club in Jamaica, the government should consider a formal, long term relationship with the organization to offer eye screenings and glasses services to the public. Considering the need for long-term sustainability, the government may help to minimize the operating costs of the organization by providing operating space for this service, and by waiving import duties on glasses coming in from international branches. Potentially the headquarters of the eye center may be located at the newly acquired government hospital (St Joseph's Hospital) which focuses on eye care. This model should be piloted for the provision of glasses, and if successful later expanded to provide other assistive devices.

5.2.4 Reducing waiting time

The re-organization and delivery of care for the elderly must address the waiting time barrier (reported by 31.4% of respondents) to accessing medical care. This will require experimenting and piloting new models of organization and delivery so as to decrease waiting times and inter-generational competition for services.

The first recommendation is to expand the weekly 'chronic disease day' (which is currently found in motivated health centers) to include all PHC facilities. This expansion should include smaller facilities such as Type 1 and 2 health centers (i.e. community

health centers) as these facilities are more likely to serve rural, and isolated communities with a large elderly population. This service will require having a PHC doctor visit health centers at a minimum of once a week to attend to the chronically ill. This expansion of services will serve to increase access, and reduce wait times as few people will need to filter to the larger, more urban health centers for ambulatory and preventive care.

In order to prevent inter-generational competition, and the inherent elder biases associated with the 'first come first served' number appointment system, it will be important to develop a more equitable, age/patient friendly appointment system for PHC (WHO, 2002; WHO, 2004a; WHO, 2012; MAWC, 2011; Forest, 1998; Aday & Andersen, 1974). The recommendation of this document is to pilot a block-appointment system under which the chronically ill will be assigned appointments in three-hour blocks on chronic disease days. This system should reduce waiting time to three hours or less, and will also reduce the need for competition with younger generations to access appointments. Suggestions for an elder friendly appointment system such as this, have been recommended from focus group discussions held by in Jamaica by WHO, and has recently been called for in a television interview with the National Council for Senior Citizens (WHO, 2002; Eldemire-Shearer, 2009).

Implementing a block appointment system will require enforcement of government operating hours (8am to 4pm) to ensure that health centers are not closed and patients turned away by mid-afternoon. Enforcement of clinic hours is likely to pose some difficulties however, as it goes against deep-rooted cultural practices. Since punitive measures by the government have failed to resolve this ongoing issue, it may be judicious to address the matter through other means. One such avenue may be through

the staggering of shifts across an 8am to 8pm work day. Under this model, most staff will be required to operate during routine government hours, but a core set of staff will initiate work activities between the hours of 12pm and 8pm. This delivery model should be piloted at select urban and rural sites to determine feasibility and acceptability to both staff and patients. Volatile communities should be excluded from such a model as client and staff safety is of outmost importance. Such a model should not pose a significant problem for the MoH, as it is in keeping with their renewal of PHC plans, where type 4 and 5 health centers (i.e. Parish and Comprehensive health centers) will operate with extended evening hours and Saturday sessions, as needed by the community. These interventions are expected to be beneficial in reducing overall burden, and congestion at health centers, and may also improve access for the elderly whose family members may now be in a better position to take them to the facility.

5.3 Recommendation for Staff and Care-Giver Training

Training of health staff and informal caregivers is crucial to the provision of age friendly services. This is due to the specialized nature of elder care and the need for carefully honed elder sensitive skill-sets; in the Jamaican context training is particularly important based on the low prevalence (53.5%) of PHC staff who report ever having elder-specific training (Eldemire-Shearer, 2009). The need for staff and caregiver training is highlighted by various age-friendly documents, including MIPAA (WHO, 2002), the PERTH framework (WHO, 2004a), and PAHO/LAC ageing recommendations.

Training modules must vary in intensity, and range from basic functions that are applicable to Community Health Aids (CHAs), to more detailed training that is relevant to nurses and Clinicians. Training modules must also address as a matter of importance,

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the belief that health promotion activities such as healthy diets and physical activity, are not beneficial to the elderly as they are already too old and too frail. Training must be used to remind health staff that all levels of prevention are effective in the elderly, with small interventions producing dramatic impacts on their overall health (Mona Ageing and Wellness Centre (MAWC), 2011). The life-course approach must therefore be stressed to both health providers and caregivers and to the elderly themselves.

The training of clinical staff should also take special care to include methods for improving the diagnostic accuracy of depression, dementia and urinary incontinence in the elderly. These conditions are many times missed, or misdiagnosed within this population due to their unusual presentation as compared to younger populations (Pelaez & Rice, 2004; Prince, 2007; MAWC, 2011). Including training on effective communication is also crucial in this cohort as sensory impairment such as diminished hearing and vision, and reduced cognitive and mental abilities may complicate communication with these patients. Communication is likely to be further complicated by the Jamaican elderly that have low education rates (only 22% are educated past primary school level). For caregivers, improved communication skills along with a greater understanding of the limitations experienced by the elderly may help to reduce strain and frustration, and by proxy the ability to maintain appropriate care for the elderly.

In general, the issues that should be covered in training include:

- Basics of elder sensitive care

- Communication skills building

- Social and psychological aspects of ageing (including caregiver coping mechanism)

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- Importance of prevention including the need for healthy lifestyles and exercise

- Importance of screening to identify changes in health (i.e. dementia, depression, functional ability, risk for falls)

- Ways of accommodating elder needs and limitations

- Presence of comorbidities

- Differences in elder presentation of illnesses (e.g. dementia, incontinence, depression)

- Poly-pharmacy issues and medication toxicity/side effects

- Pain management and malnutrition

(Pelaez & Rice, 2004; MAWC, 2011; MoH, 2011).

In order to deliver appropriate training, the first step must be the roll out of the WHO's Age Friendly PHC Clinical toolkit. Sensitization and education on this toolkit was undertaken by WHO with key academics and government officials from Jamaica being included in this process. Since then, the toolkit has been adapted for the Jamaican context, by the Mona Ageing and Wellness Centre (MAWC), and since then piloting has been initiated. Due to the expert-approved content, and the political acceptability of this toolkit, it may be used as a foundation to train PHC staff and caregivers in elderly health.

The roll-out of this toolkit will require the MAWC to undertake a 'training of trainers' exercise. These newly trained health providers will in turn be tasked with providing widespread training to PHC staff island-wide. The training of routine PHC staff should be staggered in each Regional Health Authority (RHA) to ensure that varying categories of staff are trained, and that service delivery at health centers are not limited due to lack on staff during training days. The RHAs under this model will be responsible

for implementing the toolkit and organizing trainings, with the MoH and/or PAHO potentially assisting in funding these activities. Separate trainings should preferably be undertaken for CHAs, as it may be more suitable to integrate components of elder training into the already existing CHA training manual.

In addition to training on the PHC clinical toolkit, the MoH should engage local universities and training centers, to offer both undergraduate and graduate courses, and to include geriatric and gerontology specialties within various fields (Pelaez & Rice, 2004; Eldemire-Shearer, 2009; PAHO, 2002; WHO, 2002; WHO, 2004a). Training bodies should also offer ongoing education options through regular offerings of short courses, and continuing medical education (CME) certification in geriatrics and gerontology. A systematic review of 81 RCTs documented that CME training provides significant changes (p<.01) in physician practice and patient outcomes (Forsetlund et al., 2009). As such, PHC staff members such as nurses, pharmacists and doctors should be required to obtain CE/CME credits in in this field at least every two to three years. Demand for these courses may be stimulated by the MoH, through sponsorship of employees to undertake these courses (within the existing employee benefits structure), and through consideration of these courses during staff evaluation/promotion exercises. Finally, to promote training in this area, the government will need to formalize/strengthen policies that require general practitioners to have post bachelor/MBBS training in Family Medicine (PAHO, 2002; Pelaez & Rice, 2004).

5.4 Recommendations for Accessibility of Facilities

Many elderly persons due to declines in physical strength, balance and sensory ability (whether due to age or chronic disease), find navigating their environments to be difficult and even risky. Consequently, they may require assistive devices like wheelchairs and walking canes to allow them increased mobility. Based on these conditions, PHC facilities must facilitate the safe, and independent movement of the chronically ill, the elderly and the disabled if they are to have equitable access to health services (WHO, 2004a; WHO, 2012; HEN, 2004). The PHC environment should be one where clients are able to navigate the facility freely, without fear of injury and without discrimination due to their functional limitations. Such 'age friendly' PHC facilities are supported by the MIPAA, the active ageing approach, and the PERTH frameworks. These activities are in keeping of the MoH vision for the health sector, which calls on an equitable health system, which *'... is client-centered and guarantees access to quality health care for every person ...and takes into account the needs of the vulnerable among us"* (MoH, n.d.).

One of the simplest but most important aspects of increasing accommodation of clients is the provision of large, clear signage throughout the center. This must include the use of not only written but also pictorial cues. Details for executing these activities are documented in the PHC tool kit (WHO, 2008; MAWC, 2011)

The World Health Organization (2002; 2004) advocates for the use of 'Principles of Universal Design' to update the physical layout of PHC centers as is feasible. The PHC toolkit offers practical steps to reduce injury and improve the comfort of PHC clients. The most crucial design principles for a PHC facility include: i) the provision of

simple, and intuitive design, where unnecessary complexities are removed; ii) low tolerance of error, where the environment is organized in such a way as to reduce hazards and the risk of patients making dangerous mistakes. This may include warning signs (that include both pictorial and written cues) and the inclusion of fail-safe measures. iii) Ensure low physical effort is needed on the part of the patient i.e. fatigue and repetitive action on the part of the clients must always be minimized. iv) Provide sufficient space and size for the disabled or functionally impaired to maneuver. This includes providing enough space for wheelchair/ assistive device access, and handles/grips that are large and sturdy enough to support clients.

The PHC toolkit also provides an environmental assessment tool which can be used by public health inspectors or other trained staff members to audit the PHC facility and identify areas of risk. This assessment may be used as evidence to support the upgrade of facilities to ensure they meet international standards, and by extension are age- and disability- friendly. Audits should be executed at least once a year, and findings funneled to the health department and RHA under which the facility operates.

PHC accessibility also includes ensuring that facilities such as bathrooms are clean and open to clients during operating hours. A checklist on the doors of PHC bathrooms, which documents the time it was opened, when it was cleaned and when supplies were refilled should be considered in all health centers.

In the event that theft of supplies or vandalization becomes a problem, arrangements that are clearly articulated to clients must be made for the safe storage of supplies, while maintaining easy access to clients.

Examples of this include facilitating the guard post near to the bathroom to be used to store the key, or bathroom supplies. These measures may increase complexity and frustration for the elderly however, so situation specific resolutions should be found at the point of implementation.

5.5 Recommendations for Prescription Drugs

Next to medical care, pharmaceutical services were reported as being hardest to access by the elderly. Major barriers to prescription drugs include affordability (63% of respondents) and availability (23% of respondents) of drugs. To address these barriers, the following recommendations should be considered. These finding of affordability and availability of drugs being barriers to elder care in the Jamaican population, are also supported by the INTRA study (Eldemire-Shearer, 2009)

5.5.1 Drug affordability

To address this barrier increased uptake of drug subsidies by the elderly must be encouraged; currently, 39% report access the NHF card while 35% the JADEP card. The problem of lack of awareness and apathy in regards to health insurance and drug subsidy cards, as identified by the JaStyle survey, must be tackled via the means by which most Jamaicans report getting their health information i.e. television and on the radio (Wilks, 2009). Additionally, health center staff must be informed and able to help the elderly understand the requirements and means of accessing these cards, and if necessary help them to fill-in the application forms which are available at the health centers.

In addition to tackling the issue of awareness, documentation barriers to accessing the drug cards must also be addressed. This may be done through a multi-sectoral approach between the Ministry of Labour and Security, the Registrar Generals office, and the MoH. These bodies should undertake activities to address the needs of the wide cross-section of this age group who do not possess a birth certificate, and by extension are unable to access a tax payer registration number (TRN); access to a TRN number is a requirement for enrollment in the NHF and JADEP drug programs. In addition to efforts to increase uptake of birth certificates and TRN cards, the use of another identification card which does not require possession of a birth certificate to access, may be a valid alternative for accessing the drug card.

5.5.2 Drug availability

Availability of prescription drugs must be addressed if access for the elderly is to increase. Specifically, recommendations of the MoH that pharmacy services are to be minimized and supplies concentrated in urban centers must be relooked. This principle represents the antithesis of the MoH's stated mission of removing barriers to care for the most vulnerable, and may in fact result in a deleterious effect on access. Instead an expansion of pharmacies within the PHC sector should be explored and where feasible implemented. A potential model may include the use of pharmacy techs in type 2-3 health centers, to dispense frequently accessed, essential drugs e.g. those for diabetes, hypertension and maternal child health (MCH) drugs.

Drugs covered under the NHF and JADEP should also be expanded to provide a more comprehensive set of drugs for patients, thus reducing their need to access private pharmacies and high out-of-pocket expenses. Drugs to be added should be based on

audits of most commonly used drugs, as assessed by the prescribing practices of PHC doctors and/or the dispensation volumes of private pharmacies. Potential drugs for inclusion are those for dementia, various cancer medications, and antihistamines.

5.6 Recommendations for Chronic Diseases

The management of disease in PHC needs to provide continuity and integrated care to allow for good outcomes amongst clients. This is especially true for the Jamaican elderly, where the prevalence of chronic diseases and comorbidities is high, thus requiring that episodic management give way to a more integrated and comprehensive approach. The discussion in this section will explore policy recommendations to address specific issues related to the management of chronic physical, mental and cognitive illnesses in the elderly. Due to the significance of falls in this cohort, recommendations aimed at addressing this issue will also be discussed.

5.6.1 Fundamentals of chronic disease management

Coordinated care

Physician management of the elderly must consider the high prevalence of multiple comorbidities and poly-pharmacy in the elderly, and must be ever aware of the non-typical presentation of many high burden illnesses within this cohort. This group is also less likely to tolerate errors of commission and omission in care, due to physical frailty, multiple drug interactions, and slowed metabolic clearing of toxins. As such, a patient management checklist should be included in the dockets of the elderly and of persons with comorbidities.

Table 5.2: Patient Management Checklist for the Elderly in Jamaica

Exam/Assessment	Frequency	Year 1		Year 2		Year 3	
		Date	*Signature*	*Date*	*Signature*	*Date*	*Signature*
Review of medications	Annual						
Comprehensive Short Screen	Annual						
ADL (Katz scale)	Based on short-screen						
MMSE 60-79 years 80 years and over	 Based on short-screen Annually						
Depression	Based on short-screen						
Falls risk assessment 60-79 years 80 years and over	 Based on short-screen Annually						
Immunizations Influenza Pneumococcal	 Annual Every 3 years						
Stool slide test	Annual						
***Foot checks**	Annual						
***Urinalysis**	Annual						
***Blood tests**	Every 2.5 years						
Mammogram **Pap smear** **Rectal digital exam** **PSA**	Annual Annual Annual Annual						
Sensory Assessment Vision (Snelling) Hearing Dental and nutrition	 Annual Annual Annual						
Disease specific exams: a) b)							

*Note that blood, urinalysis and foot checks should be done more frequently in diabetics

Adopted from: MoH (National Family Health Manual), 2011; MAWC, 2011

This checklist will provide a visual, time-bound reminder to PHC care-givers to ensure proper coordination, follow-up and screening within this population (see Table 5.3). This checklist should include all screening procedures for the elderly as recommended by the MoH, and should provide a reminder for the annual review of medications (including herbal, and over-the-counter drugs) taken by patients.

In addition to checklists, the provision of visual aids (e.g. desktop reminders, and large posters) should be increased in PHC facilities to ensure that all clinical staff are aware of the MoH algorithms for treating/managing common chronic conditions such as HTN and DM. These algorithms, along with the Family Health Manual, the PHC clinical toolkit, and disease-specific management protocols should be made available on the MoH website as a matter of urgency as this will allow for real-time access via smart phones/IPADs/tablets thus allowing smart phone access by care providers.

Screening tests

Routine screening tests within the elder population is important in detecting early departures of health and as such providing timely interventions to reduce associated mortality and morbidity. Such activities are embraced by the national and international health frameworks, within which these recommendations are being formulated (MoH, 2011; Eldemire-Shearer, 2009; MAWC, 2011; WHO, 2008). The age friendly PHC clinical toolkit provides a ten-minute, comprehensive screening tool that seeks to identify major threats to elder health, such as cognitive impairment, urinary incontinence, depression, functional ability, falls and vision loss.

The comprehensive screen should be utilized in all health centers and by a trained CHA to undertake annual checks on patients as they wait to be seen by the doctor (MAWC, 2011). Based on the results of this comprehensive screen, conditions that are flagged as being of potential concern should have closer follow-up.

For flagged conditions, the appropriate full-length screening test should be undertaken in conjunction with a thorough patient history, physical exams and confirmatory tests to determine a diagnosis and a relevant course of action (Eldemire-Shearer, 2009). The only exception to this should be in the case of the over 80 age group, who based on their health profile should have a full length, annual screen for falls and cognitive impairment irrespective of findings of the comprehensive test. Screenings for key conditions in the elderly may also be undertaken by trained CHAs during home visits; these visits should be especially targeted amongst the home bound chronically ill/elderly, and amongst those who have infrequent visits to health facilities. Such activities have been found to be successful in other low and middle income countries, where community health workers after a few hours of training, and previous knowledge of the elderly were able to identify cases of dementia with a 66% positive predictive value (Shaji, 2002; Ramos-Cerqueira, 2005).

Staffing

The integrated management of chronic conditions in PHC must include the expansion of staffing categories (Goffe & McCartney, 2008) to address the evolving needs of the population that they serve. Based on the health profile of the rapidly growing elderly population, appropriate staffing to address impairments and complications associated with chronic diseases, falls, cognitive and mental health declines must rank

highly amongst PHC priorities. Vital professions to be included/increased in the PHC team include: physiotherapists, optometrists, pharmacists/pharmacy technicians, social workers, adherence counselors (for non-HIV programs), community outreach teams, and occupational therapists (Starfield, 1992). In addition to increasing the staffing categories, the more basic recommendation must be for an increased number of staff to address PHC issues. This recommendation is supported by FGDs held during the INTRA study with both primary care providers and attendees at clinics (Eldemire-Shearer, 2009).

Communication

The obstacles to effective communication between caregiver and patients include hearing, vision, cognitive and mental impairment, and low literacy rates within the elderly population. As discussed before, health providers must be adequately trained in strong communication skills if they are to gain adherence from their patients in regards to prescription drugs and healthy lifestyles. Eldemire-Shearer (2009), and Nevins (2013), have documented from focus group discussions amongst elderly Jamaicans, the lack of effective and thorough communication between patients and care providers. This finding has also been identified in international literature as a limitation to producing good patient outcomes. In fact, a Danish study found that 40% of the elderly did not know the reasons for taking their medication, while 20% didn't know the consequences of non-adherence, pointing to the need for improved communication and sensitization within this group (Barat, 2001).

Communication will also be important to address the 67% of the Jamaican elderly who reported not visiting a doctor due to 'not believing they need to', or because 'it was not recommended at the last visit doctors visit'. Health provider and patient interactions must include clear conversations on health promotion activities, and the need for regular check-ups amongst this cohort.

Health education

Health education provides an important means of encouraging preventive healthy actions amongst high-risk populations. As discussed earlier, for this to be successful in affecting change, there must be buy-in from both health providers and clients. This poses specific issues within the Jamaican context, as it has been documented that health providers, do not have much confidence in the ability of preventive actions such as increased physical activity, to produce positive effects in the elderly, while the elderly themselves do not place much value on preventive care (Eldemire-Shearer, 2009). In fact, nursing staff have been documented as resistant to providing exercise activities to the elderly out of fear of them 'breaking a hip' (Eldemire-Shearer, 2009). Training and sensitization on the value of prevention in the elderly must therefore be undertaken extensively within the health system; this must be done before PHC-based healthy lifestyle programs will be sustainable, and continuous enough to see consistent impact at the community-level. Buy-in from health staff, along with targeted sensitization messages offered through the NHF's healthy lifestyle campaigns, will be crucial to changing the poor attitudes of caregivers and the elderly towards preventive activities. The healthy lifestyle campaigns by the NHF must attempt to sensitive the Jamaican populous of the need for elder prevention, and rebuff the myth that once old age has been achieved then

behavior change and improvements in health are no longer possible. As pointed out by the INTRA team, measures to educate the general population, instead of only PHC-based clients will be important in reaching key audiences such as men, who visit PHC a third less frequently than women (Eldemire-Shearer, 2009; Nevins, 2013). This approach will encourage the life course approach where all generations are taught the value of a healthy lifestyle.

Simultaneously with training and sensitization of staff, health education and self-efficacy activities must be routinely offered in all health centers. Based on space restrictions activities may include: exercise sessions; cooking demonstrations; sessions on the importance of medication compliance, and managing drug side-effects; communicating with care providers; and identifying 'red flags' for urgent care). Many undertakings of such activities exist within the Jamaican PHC system, however they are generally developed and implemented based on knowledgeable, motivated staff stationed at the health center rather than being reflective of a standardized, 'best practices' program. Formalized educational and efficacy building sessions should therefore be developed and implemented in all health centers island-wide, with some amount of flexibility built in for context specific interventions at the local level. These activities should be supported by the provision of assigned time slots, and space for such activities (Pelaez & Rice, 2004; PAHO, 2002).

Routine exercise and resistance training

Exercise promotes good health outcomes for many chronically ill persons, helping to induce weight loss, and to improve chronic disease indicators such as high blood pressure, sugar and cholesterol (WHO, 2007). Exercise is also associated with a reduced

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risk for dementia, depression and falls in the elderly, with these findings holding even in systematic reviews (MAS, 2008; Gardner, 2000; WHO, 2007). Consequently, exercise sessions should be offered in all health centers, and should be supported in chronic disease prevention and management interventions. The Comprehensive health center in the parish of Kingston and St. Andrew has operated a model program, utilizing both educational and exercise sessions to include and motivate the chronically ill. This chronic disease/elderly health club as led by health staff should engage in weekly exercise activities, taking care to teach clients how to exercise at home, and how to cook in healthier ways. Clinical parameters (e.g. weight, blood pressure, blood sugar, cholesterol) were monitored by health staff, and this was used as a motivation tool to encourage patients. Success stories were also shared on a routine basis, with successful patients being used as informal peer educators for other chronically ill clients. On occasion, both health providers and members of the senior citizen group would work together to put on mini concerts to exhibit the skills learnt, and increases in strength, balance and flexibility. Such a model encouraged a strong sense of social cohesiveness within the facility and improved health indicators of participating patients; as such this program should be replicated island wide.

Home based health care

The comprehensive management of chronic conditions must include not only clinical and educational aspects, but must also include community-based health care for needy and high-risk patients. Such services allow for increased frequency of contact with the health sector, and potentially for the early identification of key health issues. A systematic review on home visiting programs that provided preventive care and health

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education for the elderly, found that such activities significantly improved the outcomes of the target group. In fact this review found that the odds of mortality was significantly reduced by 24%, while odds of admissions to long term care decreased by 35% (Elkan, 2001). Home visiting programs have also been associated with the fulfillment of previously unmet health and social needs amongst the elderly (Elkan, 2001).

Home based health care may therefore be an important intervention to be strengthened at the community level, where it is currently offered to a limited extent by CHAs. The recommendation of this document is to expand the number of CHAs employed to the health sector, and to increase their presence in the communities (as opposed to them operating in health centers). Additionally, efforts should be made to encourage a shift of CHA focus from being primarily MCH-based to being more inclusive of chronic conditions and elder health. This recommendation is in keeping with MoH plans for the renewal of PHC, which proposes increased provision of basic community services by outreach teams that include CHAs. Under this model, services will be offered through local health centers, with type 1 and 2 health centers (i.e. community health centers) primarily offering these services. For home based care, CHAs should provide basic health services like dressing wounds, treating bed sores, doing blood pressure and blood glucose checks with the target audience. Frequent CHA contact will provide the opportunity to form relationships with the elderly and their caregivers, thus allowing for the provision of targeted health education and counseling on basics of health care, healthy lifestyles, and the importance of drug compliance. Trained CHAs should also undertake screenings for depression, cognitive impairment, and fall risk (as outlined in the PHC toolkit) in the local elderly.

5.6.2 Depression

The WHO estimates that between 10-20% of the elderly worldwide suffer from depression (Rangaswamy, 2001), which is an important predictor of increased ADL disability, cognitive decline, morbidity, and mortality (suicide and non-suicide related deaths) (Palsson, 1997; NAMI, 2009). Depression is also associated with the presence of other conditions that limit functionality and independence, such as dementia (Barua, 2011; Schoevers, 2000), and chronic diseases (Chag-quang, 2010). These findings were consistent with the elder study in Jamaica, which found 16% reporting medium to severe depression, with the burden of disease being highest amongst women and the old-old. Depression in the Jamaican cohort was also found to be significantly associated with ADL disability, cognitive decline, the presence of comorbidity, and with falls. Health providers must therefore be cognizant of depression amongst those who have these risk factors. Persons with functional disability must receive especially close monitoring for depression as after adjusting for age and gender, these persons had a 235% (OR 3.35, 95% CI 2.33-4.79) increased likelihood of being depressed. The other group needing close monitoring are the cognitively impaired. The cognitively impaired elderly also had over a 100% (OR 2.12, 95%CI 1.55-2.88) increased age and sex adjusted odds of depression. This is likely to pose significant problems in them managing the complications of their loss of cognitive ability, and may also serve to increase caregiver strain (which is associated with institutionalization). These associations indicate the need for targeted PHC interventions in preventing and managing depression in the Jamaican elderly.

Training

Depressive symptoms do not present in the elderly as it does in younger populations; somatic complaints amongst the depressed elderly many times distract PHC providers from the underlying issue (Williams, 2007). In fact depression may frequently be misdiagnosed as dementia, arthritis and even stroke (NAMI, 2009; Barua, 2011). Missed opportunities for the management of depression is also experienced when the depressed elderly make contact with health services but have their symptoms dismissed as being a normal part of ageing (Barua, 2011). Such gaps in PHC management of depression is troubling as even though management of this condition has increased over the past few decades (due to new antidepressant drugs), the disease remains under-diagnosed and inadequately treated. As outlined in the training section (section 5.2), health providers must be specially trained in identifying depression in the elderly and should be sensitized of the following properties:

- Increased risk of depression amongst the Jamaican elderly (commodities; having fallen in the last 6 months; ADL disability, and cognitive decline)

- Non-textbook presentation of depressive symptoms in the elderly

- High risk groups are to be screened for depression on a systematic basis

- Prevention and proper management of chronic diseases may reduce the risk of depression

Screening and management

Currently, the US Preventive Services Task Force (USPSTF) recommends screening for depression in primary care, as long as a system is in place for the treatment and follow-up of patients (Pignone, 2002; Williams, 2007). Based on the ability to fulfill

this requirement in PHC, the depression screening tool from the PHC toolkit should be used annually to screen high risk patients. Upon identification of a positive screen the development of a comprehensive action plan by the PHC practitioner, and the mental health officer should be undertaken. The management of the condition will require close, integrated management, review and follow-up between the primary PHC provider and the mental health officer attached/stationed at the health center (Williams, 2007). Patient follow-up must be frequent in order to monitor patient's access and adherence to prescribed medications, and to monitor changes in depressive symptoms. The life course approach must be utilized within this cohort, as changes in functional roles and critical events such as retirement and the death of a spouse, may trigger adjustment disorders; if left untreated these may lead to major depressive symptoms.

The proper management of this condition is likely to also require the use of prescription drugs, and as such patients should be made aware that they do not need to pay the full cost out of pocket, as the cost of depression dugs are subsidized by the government.

Family Support

PHC social workers and mental health officers should provide education and counseling to family members on how to engage and include the elderly into activities and how to build their sense of independence and self-worth. Consultations either individually or in a group setting should be explored, as these may help the family to design targeted interventions to fit the needs of their loved ones. Such interventions may include the use of technology such as the telephone or the internet (including email and Skype) to schedule regular interactions with children and grandchildren who are living

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abroad, thus reducing feelings of isolation and lack of self-worth. Such interventions have been reported as effective amongst elderly patients in private care in the Jamaican context. The MoH in conjunction with the Ministry of Labour and Social Security should work together to engage service groups and faith based organizations (FBOs) to provide community resources such as technology classes, day care centers, senior citizen groups, and visiting programs to the elderly. FBOs for example may use a 'match pairs' approach, whereby healthy seniors are matched with more frail elders, as a means of providing assistance with basic IADL services and providing companionship. Increased advocacy by these two Ministries for the employment of the functionally fit elderly (even on a part-time basis) should also be explored.

Multifaceted approach

The activities outlined in this section should be undertaken in conjunction with each other, as systematic reviews have found that single faceted approaches such as screening or education only, fail to improve depression and health outcomes amongst the elderly (Gilbody, 2006; Von Korff, 2001; Williams, 2007). The converse is true for multifaceted, integrated approaches as they result in improved outcomes over both the short and medium term. One such systematic review of depression outcomes in PHC, found that amongst sufficiently powerful studies, all multifaceted approaches led to improved clinical outcomes for 3-12 months, and that if the interventions which addressed not only acute phases but also provided follow-up support for patients, had positive outcomes that lasted up to four years post discontinuation of the service (Williams, 2007).

These findings are corroborated by a meta-analysis by Gilbody et al (2008) who found that integrated care with heavy non-clinical professional support improved depressive symptoms at six months assessment, with long term benefits seen up to five years later.

5.6.3 Cognitive impairment

Cognitive impairment includes both a mild cognitive impairment phase (pre-dementia), and a severe phase of full-blown dementia. Mild cognitive impairment (MCI) is thought of as a prodromal phase where patients are at an increased risk of converting to full dementia (Francesco, 2005). This fact makes the MCI group important in predicting future dementia burden. In the Jamaican population the MMSE screen indicated a high prevalence of severe impairment (11%) and also a very high burden of pre-dementia (39%). This indicates the need for action to control the current and projected disease burden, and the need to implement plans to slow the conversion of mildly impaired patients.

In terms of risk groups, women and the old-old generally had a higher prevalence of mild to severe cognitive impairment. In fact, over 60% of the young-old (60-69 years) were assessed as having normal cognitive function, while only 30% of the old-old (over 80 years) were assessed as such. The cognitively impaired also had over a 370% (OR 4.74, 95% CI 3.37-6.67) increased odds (age and sex adjusted) of also being functionally impaired. Depression was also increased in this cohort (OR 2.12, 95%CI 1.55-2.88). This points to the need for exercise and occupational therapy (discussed in sections below) to slow or reverse the functional decline that is associated with dementia.

It also points to the need for clinicians to be careful not to miss the presence of depression in this group. Treating underlying depression may help to improve some of the loss of functionality and may improve some seemingly difficult behaviors.

Trainings and screening

Though dementia burden is high, screening is not routinely undertaken in PHC facilities, and the ability of PHC staff to accurately diagnose and treat this condition in the elderly is likely to be low (as is true for depression) (Patel and Prince, 2001; Prince, 2007; Shaji, 2002). In fact, mild impairment is widely missed in developing countries, and tends not to receive the financial and human resource support needed to deal with the problems associated with this condition (Patel and Prince, 2001).

PHC provider training must be undertaken to increase diagnosis accuracy, and to reduce missed diagnoses of dementia. Such training is likely to be beneficial as studies show that PHC physicians who receive proper training are able to make dementia diagnosis with 'reasonable accuracy', during routine consultations (O'Connor et al., 1988; Cooper et al., 1992). Training must include the diagnosis of depression in this sub population, as both conditions are strongly associated and difficult to diagnose in the elderly. Improved management of expression is likely to have a positive impact throughout the course of the dementia management. Educational activities must also be undertaken amongst formal and informal caregivers, so as to address the myth of cognitive decline being an unavoidable consequence of age, and to encourage an active and aggressive approach to care.

In terms of screening, Patel & Prince (2001) reports that though population wide screening for dementia is unlikely to be cost effective, the use of screening tools amongst high-risk clients in PHC may serve to increase case detection. This indicates that training health staff to use the comprehensive screen to identify 'at risk' persons, and then to use the longer cognitive impairment screen (i.e. the Mini Mental State Exam/MMSE) to get a more detailed clinical picture, is likely to help in the early diagnosis of dementia cases. Such screens may be done during home visits or clinic visits. Based on the characteristics of this population, the old-old (especially women) and persons showing great declines in functional ability should be considered high risk for cognitive impairment and screened as the opportunity presents itself.

Addressing issues of early and accurate diagnosis is of critical importance as it increases the ability of those in the early stages of dementia to prepare financially and to make appropriate preparations for long-term care. Early diagnosis also provides the opportunity for caregivers to become knowledgeable and emotionally prepared for the new and very challenging role they will be assuming.

In addition to lack of training, issues arise due to health provider and patient perceptions of cognitive decline being a normal part of ageing and not a medical condition (MoH, 2011; MAWC, 2011). Consequently, care givers and family members may not seek help, especially in the early phases of disease when pharmaceutical and behavioral interventions are available to slow the progress of disease. General population wide sensitization campaigns will be important in addressing this myth.

Prescription drugs

In addition to screening and improved diagnosis by clinicians, other crucial aspects of dementia management include pharmaceutical interventions, exercise and behavioral interventions. The cost of pharmaceutical interventions that may slow the progression of disease represents a barrier to care as these drugs are not subsided by government drug schemes. Considering the high rates of potential pre-dementia and dementia identified in this study, along with low health insurance coverage (<20%), and frequent reports of cost being a barrier to accessing drugs, this oversight of the NHF must be corrected as an urgent priority.

Exercise

Exercise has been widely identified as a means of reducing the risk for cognitive decline. A systematic review by the Medical Advisory Secretariat of Ontario (2008) showed that in middle-aged persons, regular physical activity reduced the risk of dementia over a mean follow up period of 21 years. In the elderly, the risk of cognitive decline was reduced over a follow-up period of two years, and reduced the risk of full dementia over a follow-up of 6-7 years. This evidence points to the need for a life course approach where not only the elderly and the chronically ill are encouraged to increase physical activity and healthy lifestyles. Exercise programs as outlined in section 5.5, should be made available to and encouraged amongst all PHC visitors, with the middle aged and older persons being closely targeted. National campaigns by the NHF currently support an active and healthy lifestyle, and may be used to provide more targeted messages.

Occupational therapy

Behavioral and psychological symptom management of dementia is important for both patients and caregivers, and must be undertaken by mental health officers, occupational therapists and health education officers stationed at the closest type 4 or 5 health center. Such activities must be included as an integral part of the comprehensive management of dementia/pre-dementia patients as non-pharmaceutical interventions have been shown via systematic reviews to produce similar or better outcomes than those experienced with cholinesterase inhibitors, and without the side effects (Graffe, 2006). Patients and caregivers are in need of these interventions as they are both at increased risk for becoming depressed and socially isolated as the patient's ability for independent function decreases. This assertion is supported by evidence that caregiver strain is particularly high for dementia patients as compared to other chronic diseases (Prince, 2007; MAS, 2008), and that caregivers are at an increased risk of developing chronic morbidities themselves (MAS, 2008).

Caregiver strain is highly dependent on one's ability to manage the behavioral and psychological symptoms of the patient, and if left unaddressed may result in a reduction of the quality of care that patients receive at home (MAS, 2008). This is of significance as poor caregiver-patient relationships is a strong predictor of the patient's inability to remain in the community and the need for institutionalization (Hebert, 2001; MAS, 2008). Based on the financial insecurity amongst many Jamaican elderly; the low rates of retirement planning; low health insurance coverage; and limited ability for the government to cover the living expenses of this population, the need for institutionalization must be prevented, and entertained only as a last alternative.

Behavioral therapy presents as a simple, cost effective measure to reduce caregiver strain, improve patient symptomology and to maintain patients within their homes, and as such must be aggressively explored within the PHC context.

Behavioral interventions through education, training and support of informal caregivers and patients provide a means of reducing care-giver strain and better managing symptoms. The use of occupational therapy that focuses heavily on behavioral interventions have been shown to be effective in dementia management (Gitlin, 2005; Graffe, 2006). These activities focus on training patients to use aids to compensate for reductions in cognitive ability, and by improving their ability to perform ADLs. Caregivers on the other hand are taught coping skills; skills for managing behavioral problems; and skills for the effective supervision of patients, thus increasing self-efficacy within this group (Gitlin, 2005; Graffe, 2006). Such interventions have been shown to be effective in reducing caregiver strain and depression in other low and middle-income countries, and so may likely be effective in this setting (Dias, 2008; Gavrilova, 2008). The Medical Advisory Secretariat (MAS) of Ontario also supports this approach, indicating in a technical document on dementia interventions that there is 'moderate to high' quality evidence to support the use of behavioral interventions to reduce caregiver strain (MAS, 2008). This recommendation was made after assessment of evidence via the GRADE framework (MAS, 2008).

Based on this evidence, scheduled behavioral interventions should be offered to patients and caregivers in PHC. Sessions may be offered as individual and/or group sessions, as time and resources permit. Contingent on positive outcomes from this intervention more staff (e.g. mental health officers, social workers, health educators, and

occupational therapists) will need to be employed to the health sector as the proportion of elderly grows. A randomized control trial by Graffe et al (2006) showed that two sessions per week over a 10-week period with the target audience was effective in improving dementia outcomes; the systematic review by MAS (2008) supported these claims, finding positive outcomes with as few as six sessions. The systematic review found that positive effects remained up to 12 weeks after cessation of the intervention, with patients still showing improved motor and process skills, and improved ability to perform ADLs (Graffe, 2006). Based on evidence coming from the implementation of these activities in Jamaica, refresher sessions may be scheduled on a systematic basis.

Multifactorial approach

Dementia interventions must be provided in a comprehensive, multi-component approach including: screening for early signs of dementia by CHAs in the field and at health center visits; training of health staff to accurately diagnose the condition; pharmaceutical management; and behavioral (including exercise) interventions. The MAS (2008) document supports this approach as it indicates that evidence for the use of multicomponent interventions to reduce caregiver psychosocial health, and the rates of institutionalization of patients, is of moderate to high evidence.

5.6.4 Falls

Falls are one of the 'giants of geriatric medicine' (Miller, 2000), with approximately 20-30% resulting in moderate to severe injury that reduces quality of life e.g. hip fracture (Fuller, 2000). Falls in the elderly is associated with increased functional decline in performing both ADLs (e.g. bathing oneself) and IADLs (e.g. preparing ones meals).

Such limitations lower elderly independence; increases social isolation and the risk for depression; and significantly increases risk of premature mortality and entry into residential facilities (Tinetti, 2003; Lawyor, 2003).

In this study, 22% of the elderly, and roughly 30% of the over 80 age group reported having fallen in the past six months. Falls were found to be significantly associated with depression, functional ability, comorbidity and a diagnosis of hypertension, diabetes and arthritis. In populations such as this where the chronic disease burden is high, aggressive measures must therefore be taken to prevent and manage falls, and to prevent fall-associated hospitalization, institutionalization and premature death.

It is important to note that although closely associated, falls are not inevitable with age. In fact if risk factors for falls such as chronic disease flares; loss of muscles strength and balance; and multiple prescription medications are prevented/addressed then the speed of functional decline may be reduced, and damage reversed at any age (WHO, 2007). PHC is optimally placed to address many of the risk factors for falling, but it must be prepared to mount a comprehensive, multidisciplinary response if proper prevention and management is to occur. Systematic reviews, and technical documents on falling have indicated that a 'multifactorial risk assessment and management program' is significantly more effective in reducing ever falling and the rate of monthly falls, than the second most effective option of exercise only (Gardner, 2000).

For PHC to engage in a multi-factorial approach to fall prevention, the entire health team must work together to address risk factors. This approach is not expected to be very expensive as it draws upon skills that are already present in the health facility. Multi-factorial PHC programs should engage in the following:

- Systematic screenings

- Regular physical activities including balance and muscle training

- Rehabilitation to address mobility issues

- Frequent medication review and management

- Reduction of medications that cause postural hypotension and sedation

- Provide calcium and vitamin D supplementation (especially for women)

- Routine sensory assessment (including the repair of cataracts during the early phase)

- Environmental risk assessment and modification

- Address foot and shoe problems

- Dealing with orthostatic hypotension

- Prevention of chronic disease flares

(Chang 2004; WHO, 2007; HEN, 2004; PHAC, 2005; VAC, 2002)

Screenings

Screenings for individual and environmental risks amongst the elderly must be undertaken in a routine manner. In assessing risk factors, the PHC provider must utilize a life course lens, with awareness of the accumulation of risks over a lifetime being considered during screening. Once high-risk patients are identified then risk reduction strategies that are patient/care-giver oriented must be developed; care-givers should be included in patient action plans and in training sessions for risk reduction, as much as possible. Recommendations for screenings in this population are outlined in section 5.5, and should be abided by for fall risk.

Exercise

The use of exercise may help to mitigate accumulated risks over one's life-course, by lowering the disability threshold of individuals, and preventing falls (Gardner, 2000). Exercise amongst the elderly has been shown to have a dramatic effect if muscle strengthening and balance re-training are started during the point when functional loss is first identified (Gardner, 2000). Programs like Fallproof[TM], which is a balance and mobility training program built on evidence from RCTs and effectiveness studies, provides health educators with a comprehensive training program that may be used to reduce falls in the elderly. The program uses standardized content and delivery methods, and involves an effectiveness assessment at the end of the program. (Rose, 2003) Such programs may be used as a foundation for designing interventions in local health centers.

Appropriately targeted exercise programs of sufficient intensity (i.e. using resistance bands and/or weights) will increase muscle strength, balance, and cardiovascular fitness in this cohort, thus reducing their risk for falling (Buchner, 1992; Gardner, 2000). In a systematic review of 12 RCTs the specific form of exercise found to reduce falling risk included: strength and balance re-training, endurance training, flexibility exercises, computerized balance training, Tai Chi, stand up/step down activities, walking, and combinations of these activities (Gardner, 2000). This wide array of effective measures provides the opportunity for many low cost and effective alternatives to be implemented in PHC. Generally, whether exercise is undertaken at home or in group settings such as in health centers, they were found to be effective. The only exception to this was in circumstances where exercises provided insufficient intensity, and where there was poor patient compliance with the program. Based on this

evidence PHC should provide exercise classes that utilize exercise bands and/or weights to provide muscle resistance and balance (Gardner, 2000; Buchner, 1997). Gardner (2000) warns that the ability to manage weights is many times underestimated in the elderly, but must be realistically assessed before being ruled out as a valid option (Gardner, 2000). Alternately, 'body weight' exercises that utilize one's own body weight to provide resistance may present a cheaper option that may be used in this setting. Yet another systematic review emphasized balance retraining as the most important exercise component (Province, 1995); Tinetti (1996) supports this finding, stating that on a scale from 1 to 12, even an increased balance score of only one point could reduce the fall rates by 11% (Tinetti, 1996). In addition to providing exercises to prevent and recover from falls, physiotherapists may be useful in improving mobility, postural control, and overall physical functioning after injury has occurred, in order to return patients to baseline functioning (Fuller, 2000).

Environmental assessment and modification

In the Jamaican population falls were highest in the home (54%), indicating the need for environmental assessment of homes. This may be done through screener questions and the training of care givers on what risk factors to be cognizant of and how to arrange the home environment to reduce trips and falls. CHAs may also be trained to undertake this assessment in the homes of the old-old, and those who have infrequent visits with the health services. Since many of the rural elderly maintain informal employment by farming near to their homes, this practice must also be assessed, as a means of increasing safety while allowing the elderly to maintain independence, dignity, and possibly an important source of income.

Table 5.3: General Primary Health Care Policy Recommendations for the Jamaican Elderly

Organization of PHC	Training in elder health	Accessibility of facilities	Prescription drug services
Increase focus on preventive services instead of on event specific, ambulatory care **Out of pocket costs and availability of services** Establish referral/outsourcing relationships with major NGOs and private facilities to provide direct access to services (e.g. mobile clinics, specialist clinics, or NGO partnerships) Use cost sharing mechanisms (e.g. through NHF) to supplement cost of preventive services not widely offered in government Use FISH/Lions Club model to provide glasses and other assistive devices Provide within health centers, a directory for community/ social services that are available to patients. Also identify possibly point persons at the NGO/FBO/Gov agency • Linking to community services • Support groups • Paying for needed private services **Waiting Time** 'Chronic Disease Day' at all health centers Replace the number system with a block-appointment system to reduce wait time and intergenerational competition Utilize a shift system with extended hours, on chronic disease days to support the block-appointment system Enforce government approved operating, and extended hours within health facilities. Through community sponsorship, provide a light, healthy snack on Senior citizen/chronic disease day (e.g. soup). The community health center at the UWI, Mona campus may be used as a model.	**Staff training** Train PHC workers on use of the 'WHO clinical toolkit' adopted for the Jamaican context. Provide basic training in elder sensitive practices for all categories of PHC staff (i.e. characteristics of elder disease presentation; caregiver strain; poly pharmacy issues) Raise awareness among primary care health workers of the accumulation of minor/major disabilities experienced by older people and the important role of prevention in this population Provide clinical training to improve diagnostic accuracy of depression, dementia and urinary incontinence in the elderly Train various categories of staff especially CHAs on using screening instruments to flag cognitive, mental health, and chronic disease issues PHC clinical toolkit be included in any orientation program for new PHC staff Ensure that the toolkit is easily available to staff (both hard copies at the facilities and also electronic copies) **Informal Caregivers** Train both informal caregivers and health staff on communication with the elderly, considering possible literacy limitations, and sensory, mental and cognitive impairment Train informal care givers (e.g. family and community members, church volunteers) to manage basic home care activities and emphasize the importance of secondary prevention to maintaining health **Academia** Provide undergraduate and graduate level training in geriatrics and gerontology at local Universities Include active ageing principles in the educational curricula of all health students Offer short courses, and CME/CE credits on gerontology/geriatrics to health staff. Make CME certification in this field, mandatory for PHC practitioners Require that GPs to be trained in Family Medicine with geriatric specialization Government subsidies/study grants to be provided for these courses	Apply the common principles of Universal Design to the PHC center whenever practical and affordable As a government priority, health facilities especially in PHC are to be upgraded in compliance with the new Disability Act and the principles of universal design Equip PHC centers with good lighting, non-slip surfaces, stable furniture and clear walkways Post simple and easily readable signage to facilitate orientation of older persons Identify key health care staff with name boards and name badges Ensure that PHC facilities, including waiting areas and bathrooms are clean, comfortable, and easily accessible Staff to undertake environmental audits to test primary health care centers for their age-friendliness. Audit tool is found in the PHC clinical toolkit	Expand pharmacy services in health centers i.e. provide at a minimum basic chronic disease drugs (DM and HTN), MCH drugs and first aid supplies Utilize pharmacy technicians at type 1-3 health centers where only basic chronic disease and MCH drugs will be accessible. Supervising Pharmacist may be available by telephone. NHF and JADEP to increase coverage of drugs (dementia, thyroid, antihistamines), based on audits of prescribing practices of PHC physicians Include the RGD and Ministry of Labour and Security in activities aimed at accessing birth certificates and TRN for the elderly Measures must be explored to determine how to provide birth certificates and TRNs to the elderly. The use of a voter registration card instead of a birth certificate as a means of accessing the drug cards should be explored.

Table 5.4: Chronic Disease Specific Primary Health Care Policy Recommendations for the Jamaican Elderly

Chronic Disease Management	Health Education	Disease specific recommendations		
		Depression	Cognitive Impairment	Falls
Provide a multifaceted approach to care, instead of single isolated activities. Review regularly the use of all medications including traditional medicine and practices Ensure availability of a short, comprehensive screening tool, and also longer disease specific screening tools. Tools must be simple enough for trained non-clinicians to utilize (possibly as patients wait to be seen or to get their drugs) Annual short-screenings for elder risks i.e. falls, depression, MMSE, vaccines. Based on the results of this short-screening tool, full screens should be undertaken. The over 80 group should have Falls and dementia screens annual irrespective of the results of the short-screen Patient management checklist to be inserted into dockets for the over 60yr age group Provide access on MoH website to algorithms and manuals, allowing smart phone access Expand the PHC team to include vital members (i.e. physiotherapists, optometrists, social worker, community outreach team) Use of CHAs to provide some home based health services • Bed sores and dress wounds • Diabetic and blood pressure checks • Health education	Provide time and space for health education/self-efficacy sessions (e.g. exercise, cooking demonstrations compliance talks, how to manage medication; importance of compliance; communication with your doctor, red flags for urgent care) Explore the use of a 'senior citizen health club' model e.g. that of the Comprehensive Health Center in KSA Use success stories and peer educators from the local senior citizen health group to motivate other clients (similar to the model at the Comprehensive HC in KSA) Highlight and capitalize on already present members of the PHC team such as CHAs, patients and families of patients. Provide educational and self-care pamphlets for the elderly and their caregivers	Work to better manage and prevent chronic disease flares Strong coordination between PHC physician and Mental health staff Undertake close monitoring of depressive symptoms Ensure access and adherence to prescription drugs Reduced social isolation by the provision of mobile and sensory assistive devices e.g. wheelchairs, walking canes, and glasses and hearing aids Engage family members to support the emotional needs of the elderly Support the provision of social and community activities Use health education to increase self-efficacy to manage health complications	Provide training to clinicians to increase diagnosis accuracy, and to reduce missed diagnoses Use education to address the myth of cognitive decline being an unavoidable consequence of age Screens should be done annually for the old-old, and otherwise as is required based on the comprehensive screen Screens may be done during home visits or clinic visits. Offer dementia medications on NHF/JADEP drug card Use occupational therapy to address: • Behavioral and functional symptoms in patients • Psychological support to reduce caregiver strain Provide exercise programs for clients	Systematic screenings at health center and/or during home visits. The old-old should have screens at least once per year Prevention of chronic disease flares and management of orthostatic hypotension Frequent review of medication management. Reducing those that cause postural hypotension and sedation Provide calcium and vitamin D supplementation, especially to women Provide regular exercise session which include resistance training, and balance and muscle re-training e.g. Fallproof ™ Provide physical therapy to address mobility issues Routine sensory assessment, at least annually (repair cataracts during the early phase) Environmental risk assessment and modification (both home and health center) Address foot and shoe problems

5.7 Conclusion

Two tables which summarize the PHC recommendations made in this chapter are presented below (Table 5.3 and 5.4). The first table (Table 5.3) summarizes the overarching needs of the PHC system, including aspects related to organization and delivery of services, the training of health providers/caregivers, and prescription services. Table (5.4) on the other hand summarizes the recommendations made to specifically address the chronic disease burden currently being faced by the elderly. This table also highlights means of managing cognitive and mental health impairment, and falls in the elderly.

Based on the evidence assessed in this study, these recommendations reflect the most practical and cost effective means of improving PHC for the general population and specifically for the elderly. Further research in this area should focus on developing an implementation plan for these recommendations; plans should include a logic model, and monitoring/evaluation plans to ensure speedy implementation.

CHAPTER 6

CONCLUSION

6.0 Overview

Latin America and Caribbean (LAC) countries are going through an accelerated demographic transition, within volatile economic and social environments (Palloni & McEniry, 2006). Ageing within this context is uncharacteristic of other international trends, and as such the adoption of North American or European frameworks to address the problems associated with ageing in the LAC is unlikely to be successful. Based on this limitation, it is important for Jamaica and other LAC countries to clearly define their own ageing and chronic disease trends, and to be aware of the specific ageing dynamics that exist within their borders. This is particularly true for trends related to primary health care (PHC) which may help to maintain the health, dignity and independence of the growing elderly cohort, thus allowing them to engage in formal and informal labor markets for longer periods of time.

As such, this study has sought to provide information on the health status of the Jamaican elderly, and the PHC access and utilization patterns found in this cohort. The major health issues identified in this research included the high fall and cognitive impairment rates found in this cohort, along with the significantly increasing chronic disease burden. These findings were generally significantly higher in women, with prevalence increasing with age in both sexes.

The major access and utilization barriers were reported as being due primarily to cost, waiting time and self-perceived lack of need for health services. The affordability and availability of prescription drugs also proved substantial barriers to care.

The context specific evidence from this analysis has allowed for PHC recommendations to be developed, which are practical, actionable, politically sensitive and most of all financially feasible. These recommendations have been written with input from key local stakeholders such as the Mona Ageing and Wellness Center (a World Health Organization (WHO) collaborating body), and the Ministry of Health; stakeholder involvement has helped to ensure policy relevance, and political/financial feasibility.

These recommendations are beneficial not only because of the personal benefits gained by the elderly and their families, but also due to gains achieved by the health sector in general. The recommendations are expected to provide cost savings through increased focus on disease prevention. The primary prevention (promoting a healthy lifestyle), secondary prevention (screening to identify early departures of health), and tertiary prevention (reducing functional disability) policies outlined in this document have the potential to improve elder health outcomes, reduce hospitalizations due to ambulatory sensitive conditions, prevent disability, and reduce the risk of institutionalization within this cohort. These factors work together to reduce the financial and social burden on individuals, families, communities and the wider Jamaican population.

6.1 Limitations and Way Forward

6.1.1 Community based services

Community based services were widely requested in this study, however many of these services were outside its scope and consequently not addressed. Based on increasing life expectancy, poor sensitization to the need for retirement planning, and the changing family dynamic, the elderly are likely to find themselves poorly prepared for the 10-20 years they are likely to live post retirement. As such, investments into community based services that provide home-help, ambulance services, personal care, care giver support systems, and retirement villages must be discussed while the demographic dividend still allows social welfare activities to be feasible. Ownership and provision of these services must be embraced by governmental bodies, non-governmental organizations (NGOs), faith based organizations (FBOs), and the private sector. Research into the financing and implementation of these facilities, and means of engaging stakeholders must be studied as a matter of importance.

6.1.2 Pensions and financial viability

Research must also be done to determine effective means of ensuring financial independence and integrity of the growing elderly cohort. Issues such as indexation of pensions (indexed against the inflation rate), portability of pensions (i.e. automatic transfers from one job to the other) and, most importantly, mandatory pension contributions by all working adults must be addressed.

6.1.3 Dementia research

Research utilizing 'gold standard' diagnostic procedures should be undertaken to determine the true prevalence of cognitive impairment in this population. Figures determined in this study are much higher than expected, and consequently are very worrying. If the figures are an accurate representation of the current and imminent problem, then significant interventions will be needed to stem this financial and social issue.

Studies with longitudinal methodologies should also be carried out to ascertain the 'pre-dementia' to dementia conversion rates in this population. This will provide additional evidence to support the training of formal and informal caregivers, and the development of relevant support mechanisms and institutions to deal with this need.

6.1.4 Implementation Research

The scope of this study did not allow for the development of a thorough implementation plan, logic model, and monitoring and evaluation plan for the recommendations made. As such, any research building on these policies should focus on this aspect as a matter of importance. Without clear implementation strategies, it is unlikely that stakeholder buy-in will be maintained thus decreasing political feasibility.

6.1.5 Quality and customer satisfaction interventions

This study has focused greatly on improving access through various cost saving and quality improvement mechanisms. Studies building on this research, should however seek to expand on the quality and customer satisfaction aspects of PHC provision.

Such studies must seek to provide a framework that allows the development of quality assurance guidelines, programs, and evaluation teams in PHC. Programs to assess and subsequently strengthen customer satisfaction with PHC should also be considered.

REFERENCES

Abegunde, D., Mathers, C., Adam, T., Ortegon, M., & Strong, K. (2007). The burden and costs of chronic diseases in low-income and middle-income countries. *Lancet*, 370, 1929–1938.

Aday, L., & Andersen, R. (1974). A framework for the study of access to medical care. *Health Services Research,* 9(3), 208–220.

Aday, L. (1993). *At Risk in America: The Health and Health Care Needs of Vulnerable Populations in the United States.* San Francisco: Jossey Bass.

Agency for Healthcare Research and Quality (AHRQ). (2002). Guide to prevention quality indicators: Hospital admission for ambulatory care sensitive conditions. Retrieved from http://www.ahrq.gov/downloads/pub/ahrqqi/pqiguide.pdf.

Aguero-Torres, H., Fratiglioni, L., Guo, Z., Viitanen, M., Von Strauss, E., & Winblad, B. (1998). Dementia is the major cause of functional dependence in the Elderly: 3-year follow-up data from a population-based study. *American Journal of Public Health*, 88(10), 1452-1456.

Aiken, W., & Eldemire-Shearer, D. (2012). Prostate cancer in Jamaica and the wider Caribbean: It is time to consider screening. *West Indian Medical Journal*, 61(1), 90-93.

Alexander, B., Rivara, F., & Wolf, M. (1992). Hospitalization for fall-related injuries in older adults. *American Journal of Public Health*, 82, 1020-1023.

Andersen, R. (1995). Revisiting the behavioral model and access to medical care: Does it

    matter? *Journal of Health and Social behavior*, 36, 1-10.

Bailey, W., Gordon-Strachan, G., Lalta, S., Barnett, J., Henry-Lee, A., & Alleyne, D.

    (2009). *Case for selective user fees in health care: An examination of the issues*

    related to user fees among vulnerable Jamaicans. University of the West Indies,

    Sir Arthur Lewis Institute of Social and Economic Studies, Kingston, Jamaica.

Barat, I., Andreasen, F., & Damsgaard, E. (2001). Drug therapy in the elderly: What

    doctors believe and patients actually do. *British Journal of Clinical*

    Pharmacology, 51 (6), 615–622.

Barceló, A., Aedo, C., Rajpathak, S., & Robles, S. (2003). The cost of diabetes in Latin

    America and the Caribbean. *Bulletin of the World Health Organization*, 81(1),

    19–27.

Barua, A., Ghosh, M., Kar, N., & Basiliod, M. (2011). Prevalence of depressive disorders

    in the elderly. *Annals of Saudi Medicine*, 31(6), 620–624.

Beland, F., & Zunzunegui, M. (1999). Predictors of functional status in older people

    living at home. *Age and Ageing*, 28(2),153-159.

Bender, B. (2002). Overcoming barriers to non-adherence in asthma treatment.

    Journal of Allergy and Clinical Immunology, 109(6), 554-559.

Ben Shlomo, Y., & Kuh, D. (2002). Life course approach to chronic disease

    epidemiology: Conceptual models, empirical challenges, interdisciplinary

    perspectives. *International Journal of Epidemiology,* 31, 285-293.

Bindman, A., Keane, D., & Lurie, N. (1990). A public hospital closes: Impact on patients'

access to care and health status. *Journal of the American Medical Association*, 264, 2899-2904.

Bindman, A., Grumbach, K., Osmond, D., Vranizan, K., & Stewart, A. (1996). Primary care and receipt of preventive services. *Journal of General Internal Medicine,* 11, 269–276.

Boult, C., Altmann, M., Gilbertson, D., Yu, C., & Kane, R. (1996). Decreasing disability in the 21st century: The future effects of controlling six fatal and nonfatal conditions. *American Journal of Public Health,* 86(10), 1388-1393.

Bookwala, J., & Lawson, B. (2011). Poor vision, functioning, and depressive symptoms: A test of the Activity Restriction Model. Retrieved from http://gerontologist.oxfordjournals.org/content/early/2011/07/06/geront.gnr051

Buchner, D., Beresford, S., Larson, E., LaCroix, A., & Wagner, E . (1992). Effects of physical

activity on health status in older adults. II: Intervention studies. *Annual Review of Public Health*, 13, 469–488.

Buchner, D., Cress, M., de Lateur, B., Esselman, P., Margherita, A., Price, R., & Wagner, E. (1997). The effect of strength and endurance training on gait, balance, fall risk, and health services use in community-living older adults. *Journals of Gerontology. Series A, Biological Sciences and Medical Sciences,* 52, M218–224.

Campbell, R., Ramirez, A., Perez, K., & Roetzheim, R. (2003). Cervical cancer rates and the supply of primary care physicians in Florida. *Family Medicine*, 35, 60–64.

Centers for Disease Control and Prevention. (1999). Lower direct medical costs

    associated with physical activity. Retrieved from

    http://www.cdc.gov/nccdphp/dnpa/pr-cost.htm.

Centers for Disease Control and Prevention. (2010). Selected preventive screening

    recommendations. Retrieved from

    http://www.cdc.gov/nccdphp/dnpao/hwi/resources/preventative_screening.htm

Chaix, B., Veugelers, P., Boelle, P-Y., & Chauvin, P. (2005). Access to general

    practitioner services: The disabled elderly lag behind in underserved areas.

    European Journal of Public Health, 15(3), 282-287.

Chang, J., Morton, S., Rubenstein, L., Mojica, W., Maqlione, M., Suttorp, M., Roth, E.,

    & Shekelle, P. (2004). Interventions for the prevention of falls in older adults:

    Systematic review and meta-analysis of randomised clinical trials. *British*

    Medical Journal, 328(7441), 680.

Chang-Quan, H., XueMei, Z., BiRong, D., Zhen-Chang, L., Ji-Rong, Y., Qing-Xiu, L.

    (2009).

Health status and risk for depression among the elderly: A meta-analysis of published

    literature. *Age and Aging,* 35, 23- 30.

Chao, S. (2013). Jamaica's effort in improving universal access within fiscal constraints.

    World Bank. Retrieved from

    https://openknowledge.worldbank.org/handle/10986/13290.

Chen, M., & Lyttle, C. (1987). Ambulatory care and insurance coverage in an era of

    constraint. Chicago: University of Chicago, Center for Health Administration

    Studies.

Cloose, P., Allen, C., Alvarado, B., Zunzunegui, M., Simeon, & D., Eldemire-Shearer, D. (2010). 'Active ageing': A qualitative study in six Caribbean countries. *Ageing and Society*, 30, 79-101.

Comber, A., Brunsdon, C., & Radburn, R. (2011). A spatial analysis of variations in health access: Linking geography, socio-economic status and access perceptions. *International Journal of Health Geographics*, 10, 44.

Comino, E., Powell-Davies, G., Krastev, Y., Haas, M., Christl, B., Furler, J., Raymont, A., Gardner, M., Robertson, M., & Campbell, A. (2000). Exercise in preventing falls and fall related injuries in older people: A review of randomised controlled trials. *British Journal of Sports Medicine*, 34, 7-17.

Comino, E., Davies, G., Krastev, Y., Haas, M., Christi, B., Furler, J., & Harris, M. (2012). A systematic review of interventions to enhance access to best practice primary health care for chronic disease management, prevention and episodic care. *BMC Health Services Research*, 12, 415.

Cooper, B., Bickel, H., & Schaufele, M. (1992). The ability of general practitioners to detect dementia and cognitive impairment in their elderly patients: A study in Mannheim. International Journal of Geriatric Psychiatry, 7, 591–598.

Dias, A., Dewey, M., D'Souza, J., Dhume, R., Motghare, D., … & Patel, V. (2008). The Effectiveness of a Home Care Program for Supporting Caregivers of Persons with Dementia in Developing Countries: A randomised controlled trial from Goa, India. *Public library of Service*, 3(6) 2333.

Economic Commission for Latin America and the Caribbean (ECLAC). (2004).

    Population ageing in the Caribbean: An inventory of policies, programmes and

    future challenges. Retrieved from

    http://www.cepal.org/celade/noticias/paginas/8/14928/lccarg772.pdf.

Eldemire D. (1993). An epidemiological study of the Jamaican Elderly. A Thesis

    submitted in fulfillment of the requirement of the Doctor of Philosophy in Public

    Health, Department of Social and Preventive Medicine, Mona, University of the

    West Indies.

Eldemire-Shearer, D., & the Jamaican Team. (2004). Jamaica: INTRA 2 findings. Ageing

    and Life course programme, WHO. Retrieved from

    http://www.who.int/ageing/projects/intra/phase_two/alc_intra2_finalreport_jamai

    ca.pdf

Eldemire-Shearer, D. (2007). The opportunity of ageing: The policy response in Jamaica

    1995-2005. Global Ageing Journal.

Eldemire–Shearer, D. (2008). Ageing: The response yesterday, today and tomorrow. *The*

    West Indian Medical Journal, 57(6), 577-588.

Eldemire-Shearer, D., Holder-Nevins, D., Morris K., & James, K. (2009). Prevention for

    better health among older persons: Are primary health care clinics in Jamaica

    meeting the challenge? *West Indian Medical Journal*, 58(4), 319-325.

Eldemire-Shearer, D., James, K., Nevins, D., Laws, H., Morris, C., & Willie, D. (2011).

    Project proposal: Study of older persons in Jamaica, 2011. Department of

    Community Health and Psychiatry, University of the West Indies, Mona

    Jamaica.

Eldemire-Shearer, D. (2012a). From ageing research to policy and practice. *West Indian Medical Journal,* 61(4), 380-386.

Eldemire–Shearer, D. (2012b). New age challenges. *The Gleaner*. Retrieved from http://jamaica-gleaner.com/gleaner/20121209/news/news94.html

Eldemire-Shearer, D. (n.d.). Country Profile: Status and implementation of National policies on ageing in Jamaica. Retrieved from http://www.un.org/ageing/documents/workshops/Vienna/jamaica.pdf.

Elkan, R., Kendrick, D., Dewey, M., Hewitt, M., Robinson, J., & Blair, M.(2001). Effectiveness of home based support for older people: Systematic review and meta-analysis. *British Medical Journal,* 323(7315), 719-725.

Family Care-giver Alliance. (nd). Selected long term care statistics. Retrieved on February 21, 2013 from http://www.caregiver.org/caregiver/jsp/content_node.jsp?nodeid=440.

Ferguson, T., Tulloch-Reid, M., Cunningham-Myrie, C., Davidson-Sadler, T., Copeland, S., Lewis-Fuller, E., & Wilks, R. (2011). Chronic disease in the Caribbean: Strategies to respond to the public health challenge in the region. What can we learn from Jamaica's experience? *The West Indian Medical Journal,* (60), 4.

Ferrante, J., Gonzalez, E., Pal, N., & Roetzheim, R. (2000). Effects of physician supply on early detection of breast cancer. *Journal of the American Board of Family Practice*,13, 408–414.

Fitzpatrick, A., Powe, N., Cooper, L., Ives, D., & Robbins, J. (2004). Barriers to health care access among the elderly and who perceives them. *American Journal of Public Health*, 94(10), 1788-1794.

Folstein, M., Folstein, S., & McHugh, P. (1975). Mini Mental State: A practical method

    for grading the cognitive state of patients for the clinican. *Journal of Psychiatry*,

    12, 189-198.

Forrest, C., & Starfield, B. (1998). Entry into primary care and continuity: The effects of

    access. *American Journal of Public Health*, 88,1330–1336.

Forsetlund, L., Bjørndal, A., Rashidian, A., Jamtvedt, G., O'Brien, M. & Wolf, F. (2009).

    Continuing education meetings and workshops: effects on professional practice

    and health care outcomes (Review). *The Cochrane Collaboration*. Retrieved

    from http://apps.who.int/rhl/reviews/CD003030.pdf.

Franks, P., & Fiscella.K. (1998). Primary care physicians and specialists as personal

    physicians: Health care expenditures and mortality experience. *Journal of Family*

    Practice, 47, 105–109.

Fuller, G. (2000). Falls in the elderly. *American Family Physician, 61(7), 2159-2168.*

Gardner, M., Robertson, M., & Campbell, A. (2000). Exercise in preventing falls and fall

    related injuries in older people: A review of randomised controlled trials. *British*

    Journal of Medicine, 34, 7-17.

Gavrilova, S., Ferri, C., Mikhaylova, N., Sokolova, O., Banerjee, S., & Prince, M. (2008).

    Helping carers to care—The 10/66 dementia research group's randomized control

    trial of a caregiver intervention in Russia. *International journal of Geriatric*

    Psychiatry, 24(4), 347-354.

Gibson, T., Hanchard, B., Waugh, N., & McNaughton, D. (2010). Age-specific incidence

    of cancer in Kingston and St Andrew, Jamaica, 2003 – 2007. *West Indian*

    Medical Journal, 59(5), 456-464.

Gilbody, S., Bower, P., Fletcher, J., Richards, D., & Sutton, A. (2006). Collaborative

    care for depression: A cumulative meta-analysis and review of longer-term

    outcomes. *Archives of Internal Medicine,* 166(21), 2314-2321.

Gilbody, S., Sheldon, T., & House, A. (2008). Screening and case-finding instruments for

    depression: A meta-analysis. *Canadian Medical Association Journal*, 178(8),

    997-1003.

Gitlin, L., Hauck, W., Dennis, M., & Winter, L. (2005). Maintenance of effects of the

    home environmental skill-building program for family caregivers and individuals

    with Alzheimer's disease and related disorders. *Journals of Gerontolology,*

    Series A, biological sciences and medical sciences, 60(3), 368-374.

Gitterman, A. & Shulman, L. (1994). *Mutual Aid Groups, Vulnerable Populations, and*

    the Life Cycle, 2nd edition. Columbia University Press, New York.

Glascock, A., & Feinman, S. (1980). A holocultural analysis of old age. *Comparative*

    Social Research, 3, 311-332.

Goffe, D., & McCartney, T. (2008). Redesigning the health system in Jamaica: A

    proposal (2008 update). Technical document, Ministry of Health Jamaica.

Gorman, M. (1999). Development and the rights of older people. *The ageing and*

    development report: poverty, independence and the world's older people.

    London, Earthscan Publications Ltd.

Grabbe, L., Demi, A., Jones, J., Branch, L., Lambert, R., & Whittington, F. (1995).

    Functional status and the use of formal home health care in the year before death.

    Journal of Aging and Health, 7(3), 339-364.

Graff, M., Vernooij-Dassen, M., Thijssen, M., Dekker, J., Hoefnagels, W., & Olde

    Rikkert, M. (2006). Community based occupational therapy for patients with

    dementia and their care givers: Randomised controlled trial. *British Medical*

    Journal, 333,1196.

Gulliford, M. (2002). Availability of primary care doctors and population health in

    England: Is there an association? *Journal of Public Health Medicine*, 24(4), 252-

    254.

Harris, M. (2012). A systematic review of interventions to enhance access to best practice

    primary health care for chronic disease management, prevention and episodic

    care. *BMC Health Services Research,* 12, 415.

Harris, M., Benette, J., Del Mar, C., Fasher, M., Foreman, L., & Furler, J. (2009).

    Guidelines for preventive activities in general practice. Retrieved from

    http://www.racgp.org.au/your-practice/guidelines/redbook/.

Hashem, A., Chi, M., & Friedman, C. (2003). Medical errors as a result of specialization.

    Journal of Biomedical Informatics, 36, 61–69.

Hausdorff, J., Rios, D., & Edelberg, H. (2001). Gait variability and fall risk in

    community-living older adults: A 1-year prospective study. *Archives of Physical*

    Medicine and Rehabilitation, 82, 1050-1056.

Haynes, R., McDonald, H., & Garg, A. (2002). Helping patients follow prescribed

    treatment: Clinical applications. J*ournal of American Medical Association,*

    288(22), 2880-2883.

Health Evidence Network (HEN). (2004). Older people: Risk factors for injuries.

    Retrieved from www.euro.who.int/HEN/Syntheses/injuries/20041016_4

Hebert, R., Dubois, M., Wolfson, C., Chambers, L., & Cohen, C. (2001). Factors

associated with long-term institutionalization of older people with dementia:

Data from the Canadian study of health and aging. *Journal Gerontology Series A*

Biological Sciences and Medical Sciences, 56(11), 693–699.

HelpAge International. (1999). Development and the rights of older people. *The ageing*

and development report: poverty, independence and the world's older people.

Retrieved from www.helpage.org/download/4c461a5bf010d/.

Hendriksen, C., Lund, E., & Stromgard, E. (1984). Consequences of assessment and

intervention among elderly people: A three year randomised controlled trial.

British Medical Journal, 289, 1522–1524.

Higgs, G. (2005). A literature review of the use of GIS-based measures of access to

health care services. *Health Services & Outcomes Research Methodology,* 5,

119–139.

Hudson, B. (2006). Policy change and policy dilemmas: Interpreting the community

services. White Paper in England. *International Journal of Integrated Care*, 6,

12.

Index Mundi. (n.d.) Jamaica – fertility rate. Retrieved from

http://www.indexmundi.com/facts/jamaica/fertility-rate.

James, K., Eldemire-Shearer, D., Gouldbourne, J., & Morris, C. (2007). Falls and fall

prevention in the elderly: The Jamaican perspective. *West Indian Medical*

Journal, 56(6) 534-539.

Jemal, A., Bray, F., Centre, M., Ferlay, J., Ward, E., & Forman, D. (2011). Global cancer

statistics. *CA: A Cancer Journal for Clinicians*, 61(2), 69-90.

Kuh, D., & Ben-Shlomo, Y. (1997). A life-course approach to chronic disease epidemiology: tracing the origins of ill health from early to adult life. *Oxford University Press.*

Kalachea, A., & Kickbush, I. (1997). A global strategy for healthy ageing. *World Health*, (4) July-August, 4-5.

Katz, S., Downs, T., Cash, H., & Grotz, R. (1970). Progress in development of the Index of ADL. *The Gerontologist*, 10 (1), 20-30.

LaCroix, A., Guralnik, J., Berkman, L., Wallace, R., & Satterfield, S. (1993). Maintaining mobility in late life: Smoking, alcohol consumption, physical activity, and body mass index. *American Journal of Epidemiology*, 137 (8), 858-869.

Laforge, R., Spector, W., & Sternberg, J. (1992). The relationship of vision and hearing impairment to one-year mortality and functional decline. *Journal of Aging and Health*, 4(1), 126-148.

Latin America and the Caribbean Demographic Centre (CELADE), & Economic Commission for Latin America and the Caribbean (ECLAC). (2007). Demographic observations number 3: Population estimates and projections. Retrieved from http://www.eclac.cl/cgi-bin/getProd.asp?xml=/publicaciones/xml/0/32650/P32650.xml&xsl=/celade/tpl-i/p9f.xsl&base=/celade/tpl-i/top-bottom.xslt

Lawyor, D., Patel, R., & Ebrahim, S. (2003). Association between falls in elderly women and chronic diseases and drug use: cross sectional study. *British Medical Journal*, 327, 712.

Lillie-Blanton, M., & Hoffman, C. (2005). The role of health insurance coverage in reducing racial/ethnic disparities in health care. *Health Affairs*, 24, 398–408.

Lim, S., Tai, B., Yuan, J., Yu, M., & Koh, W. (2011). Smoking cessation and mortality among middle-aged and elderly Chinese in Singapore: The Singapore Chinese health study. *Tobacco control.* Retrieved from http://tobaccocontrol.bmj.com/content/early/2011/12/14/tobaccocontrol-2011-050106.abstract.

Lions Club International. (n.d.). Eyeglass Recycling. Retrieved from http://www.lionsclubs.org/EN/our-work/sight-programs/eyeglass-recycling/index.php.

Macinko, J., Starfield, B., & Shi, L. (2003). The contribution of primary care systems to health outcomes within Organization for Economic Cooperation and Development (OECD) countries, 1970-1998. *Health Services Research*, 38(3), 831-865.

Martin, D., Diehr, P., Price, K., & Richardson, W. (1989). Effect of gate-keeper plan on health services use and charges: A randomized controlled trial. *American Journal of Public Health*, 79(12), 1628-1632.

Matland, R. (1995). Synthesizing the implementation literature: The ambiguity-conflict model of policy implementation. *Journal of Public Administration Research and Theory,* 5(2),145–174.

Matthews, K., Zhu, S., Tucker, D., & Whooley, M. (2006). Blood pressure reactivity to psychological stress and coronary calcification in the coronary artery risk development in young adults study. *Hypertension*, 47, 391-395.

McLaughlin, & C., Wyszewianski, L. (2002). Access to care: Remembering old lessons. *Health Services Research,* 37(6), 1441–1443.

Millan-Calenti, J., Tubı´o, J., Pita-Ferna´ndez, S., Gonza´ lez-Abraldes, I., Lorenzo, T., … & Maseda, A. (2009). Prevalence of functional disability in activities of daily living (ADL), instrumental activities of daily living (IADL) and associated factors, as predictors of morbidity and mortality. *Archives of Gerontology and Geriatrics,* 50, 306-310.

Miller, T., & Levy, D. (2000). Cost-Outcome Analysis in Injury Prevention and Control: Eighty-four recent estimates for the United States. *Medical Care*, 38(6), 562-582.

Ministry of Health. (MOH). (2011). *Family health manual: Elderly health.*(230-247). Kingston, Jamaica. Ministry of Health printing office.

Ministry of Health. (MOH). (n.d.). Mission statement. Retrieved from http://www.moh.gov.jm/ministry/missionvision

Medical Advisory Secretariat. (2008). Caregiver- and patient-directed interventions for dementia: An evidence-based analysis. *Ontario Health Technology Assessment Series*, 8(4), 1-98.

Mona Ageing and Wellness Centre (MAWC). (2011). Age friendly primary health care clinical toolkit. Retrieved from http://myspot.mona.uwi.edu/commhealth/sites/default/files/commhealth/uploads/complete-tool-kit.pdf

Murray, C., & Lopez, A. (1997). Alternative projections of mortality and disability by cause 1990–2020: Global burden of disease study. *Lancet,* 349(9064), 1498–1504.

National Alliance on Mental Illness (NAMI). (2009). Depression in older persons: Fact

    sheet. Retrieved from

    http://www.nami.org/Template.cfm?Section=Depression&Template=/ContentM

    anagement/ContentDisplay.cfm&ContentID=88876

National Health Fund. (2009). *Annual report, Ministry of Health and Environment*.

    Retrieved from http://www.nhfjm.org/flipbook/annual_reports/2009/#/0.

National Health Fund of Jamaica. (2010). Drugs for the elderly program. Retrieved from

    http://www.nhfjm.org/index.php/jadep.

National Institute on Ageing. (2012). Global health and ageing: New disease patterns.

    Retrieved from http://www.nia.nih.gov/research/publication/global-health-and-

    aging/new-disease-patterns.

Neita, S., Abel, W., Eldemire-Shearer, D., James, K., & Gibson, R. (2013). The

    prevalence and associated demographic factors of dementia from a cross-

    sectional community survey in Kingston, Jamaica. *International Journal of

    Geriatric Psychiatry*, DOI: 10.1002/gps.3982

Nemet, G. & Bailey, A. (2000). Distance and health care utilization among the rural

    elderly. *Social Science & Medicine*, 50, 1197-1208.

Nevins, D. (2013). Focus group discussions with the Jamaican elderly. Unpublished

    manuscript, Mona Ageing and Wellness Centre.

Niefield, M., O'Brien, E., & Feder, J. (1999). Kaiser commission on Medicaid and the

    uninsured. Long-term care: Medicaid's role and challenges. Retrieved on

    February 21, 2013 from http://www.kff.org/medicaid/upload/long.

Nikolic, I., Stanciole, A., & Zaydman, M. (2011). Chronic emergency: Why NCDs

   matter. Retrieved from

   http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/

   Resources/281627-1095698140167/ChronicEmergencyWhyNCDsMatter.pdf

   -term-care-understanding-medicaid-s-role-for-the-elderly-and-disabled-report.pdf.

Nutbeam, D. (2008). The evolving concept of health literacy. *Social Sciences and*

   Medicine, 67(12), 2072–2078.

Pan American Health Organization. (2002). The 26th Pan American Sanitary Conference:

   Health and ageing. Resolution CSP26.R20. Retrieved from

   http://www1.paho.org/english/gov/csp/csp26.r20-e.pdf.

Pan American Health Organization. (2012). *Health in the Americas. Country volume:*

   Jamaica. Retrieved from

   http://new.paho.org/saludenlasamericas/index.php?option=com_docman&task=d

   oc_view&gid=136&Itemid=.

Parchman, M., & Culler, S. (1999). Preventable hospitalizations in primary care shortage

   areas. An analysis of vulnerable Medicare beneficiaries. *Archives of Family*

   Medicine, 8, 487–491.

Paddison, O. (2006). *Social security in the English-speaking Caribbean. Project*

   document collection. Santiago de Chile: ECLAC.

Palloni, A., & Wyrick, R. (1981). Mortality decline in Latin America: Changes in the

   structures of causes of deaths, 1950 – 1975. *Social Biology*, 28(3– 4), 187–216.

Palloni, A., Pinto-Aguirre, G., & Pelaez, M. (2002). Demographic and health conditions of ageing in Latin America and the Caribbean. *International Journal of Epidemiology*, 31(4), 762.

Palloni, A. & McEniry, M. (2006). Ageing and health status of elderly in Latin America and the Caribbean: Preliminary findings. *Journal of Cross Cultural Gerontology*, 22(3), 263-285.

Palsson, S., & Skoog, I. (1997). The epidemiology of affective disorders in the elderly: A review. *International Clinical Psychopharmacology,* 12(7), S3-S13.

Panza, F., D'Introno, A., Colacicco, A., Capurso, C., Del Parigi, A., Capurso, S., … & Solfrizzi, V. (2006). Cognitive frailty: Pre-dementia syndrome and vascular risk factors. *Neurobiology of Ageing,* 27(7), 933-940.

Patel, V., & Prince, M. (2001). Ageing and mental health in a developing country: Who cares? Qualitative studies from Goa, India. *Psychological Medicine,* 31(1), 29–38.

Pelaez, M., Rice, M. (2004). Primary health care and aging: Edited proceedings of the consultative group. Meeting on geriatric training in primary health care. *Californian Journal of Health Promotion*, 2(3), 99-108.

Pelkonen, M., Notkola, I., Tukianinen, H., Tervahauta, M., Tuomilehto, J., & Nissinen, A. (2001). Smoking cessation, decline in pulmonary function and total mortality: A 30 year follow up study among the Finnish cohorts of the Seven Countries study. *Thorax*, 56(9), 703–707.

Penchansky, R., & Thomas, J.W. (1981). The concept of access: Definition and relationship to consumer satisfaction. *Medical Care,* 19 (2), 127-140.

Pharmacy Council of Jamaica. (n.d.). Pharmacy Council of Jamaica. Retrieved from

    http://www.pcoj.org/

Phillips, C. (1992). Vulnerability in family systems: Application to antepartum. *The*

    Journal of Perinatal and Neonatal Nursing, 6(3), 26–36.

Pignone, M., Gaynes, B., Rushton, J., Burchell, C., Orleans, C., Mulrow, C., & Lohr, K.

    (2002). Screening for depression in adults: A summary of the evidence for the

    US Preventive Services Task Force. *Annals of Internal Medicine, 136(10), 765-*

    776.

Planning Institute of Jamaica (PIOJ). (2009). *Vision 2030 Jamaica. National*

    Development Plan: Planning for a secure and prosperous future. Retrieved from

    http://www.vision2030.gov.jm/Portals/0/NDP/Vision%202030%20Jamaica%20

    NDP%20Full%20No%20Cover%20(web).pdf.

Planning Institute of Jamaica (PIOJ) & Ministry of Foreign Affairs and Foreign Trade.

    (2009). National report of Jamaica on the Millennium Development Goals, for

    the UN Economic and Social Council annual ministerial review. Retrieved from

    http://www.jm.undp.org/files/GOJ%20National%20Report%20to%20UNAMR-

    Final.pdf.

Planning Institute of Jamaica (PIOJ). (2010). *The Jamaica Survey of Living Conditions.*

    Ministry of Finance and Planning.

Planning Institute of Jamaica (PIOJ). (2012). Jamaica's competitiveness: Analysis of

    global competitiveness. Retrieved from

    http://pioj.gov.jm/Portals/0/Economic_Sector/PIOJ%20Analysis%20of%20the%

    202011-12%20GCR%20Report.pdf.

Prince, M., Ferri, C., Acosta, D., Albanese, E., Arizaga, R., Dewey, M., … & Uwakwe, R. (2007). The protocols for the 10/66 dementia research group population-based research programme. *BioMedical Central: Public Health*, 7, 165.

Province, M., Hadley, E., Hornbrook, M., Lipsitz, L., Miller, J., Mulrow, C., & Wolf, S. (1995). The effects of exercise on falls in elderly patients. A preplanned meta-analysis of the FICSIT trials. Frailty and injuries: Cooperative studies of intervention techniques. *Journal of American Medical Association*, 273(17), 1341-1347.

Public Health Agency of Canada (PHAC). (2005). Report on seniors' falls in Canada. Retrieved from http://publications.gc.ca/collections/Collection/HP25-1-2005E.pdf?.

Ramos-Cerqueira, A., Torres, A., Crepaldi, A., Oliveira, N., Scazufca, M., Menezes, P., & Prince, M. (2005). Identification of dementia cases in the community: A Brazilian experience. *Journal of the American Geriatrics Society*, 53(10), 1738-1742.

Ranabir, S. & Keetu, K. (2011). Stress and hormones. *Indian Journal of Endocrinology and Metabolism*, 15(1), 18–22.

Rangaswamy, S., Bertolote, M., Epping-Jordan, J., Funk, M., Prentice, T., Saraceno, B., & Saxena, S. (2001). Mental health: New understanding, new hope. *The World Health Report 2001*. Retrieved from

http://www.who.int/whr/2001/en/whr01_en.pdf

Regan, J., Schempf, A.,Yoon, J. & Politzer, R. (2003). The role of federally funded

    health centers in serving the rural population. *Journal of Rural Health*, 19, 117–

    24.

Remington, P., Brownson, R., & Wenger, M. (2010). *Chronic Disease Epidemiology and*

    Control. 3rd Edition. Washington: American Public health Association. P 29-30.

Riley, J. (2005). *Poverty and life expectancy: The Jamaican paradox*. Cambridge:

    Cambridge University Press.

Rivo, M., & Satcher, D. (1993). Improving access to health care through physician

    workforce reform. *Journal of the American Medical Association*, 270, 1074-

    1078.

Roetzheim, R., Pal, N., Gonzalez, E., Ferrante, J., Van Durme, D., Ayanian, J., &

    Krischer, J. (1999). The effects of physician supply on the early detection of

    colorectal cancer. *Journal of Family Practice*, 48, 850–858l.

Rogers, A. (1997). Vulnerability, health and health care. *Journal of Advanced Nursing*,

    26, 65-72.

Rose, D. (2003). *Fallproof! A comprehensive balance and mobility training program*.

    Windsor, Ontario, Human Kinetics. Retrieved from

    http://hhd.fullerton.edu/csa/CenterProducts/documents/FallproofsecondedFlier.p

    df.

Rose, M., & Killien, M. (1983). Risk and vulnerability. A case differentiation. *Advances*

    in Nursing Science, 5(3), 60-73.

Rosser, W. (1996). Approach to diagnosis by primary care clinicians and specialists: Is

    there a difference. *Journal of Family Practice,* 42:139-144.

Rust, G., Ye, J., Baltrus, P., Daniels, E., Adesunloye, B., & Fryer, G. (2008). Practical

    barriers to timely primary care access: Impact on adult use of emergency

    department services. *Archives of Internal Medicine*, 168(15), 1705-1710.

Ryan, A. (1999). Medication compliance and older people: A review of the literature.

    International Journal of Nursing Studies, 36(2), 153-162.

Schoevers, R., Geerlings, M., Beekman, A., Penninx, B., Deeg, D., Jonker, C., & Van

    Tilburq, W. (2000). Association of Depression and gender with mortality in old

    age. *British Journal of Psychiatry*, 177, 336–342.

Schroeder, S. & Sandy, L. (1993). Specialty distribution of US physicians-the invisible

    driver of health care costs. *New England Journal of Medicine*, 328, 961-963.

Shaji, K., Arun Kishore N., Lal, K., & Prince, M. (2002). Revealing a hidden problem.

    An

evaluation of a community dementia case-finding program from the Indian 10/66

dementia research network. *International Journal of Geriatric Psychiatry,* 17(3), 222–

    225.

Shea, S., Misra, D., Ehrlich, M., Field, L., & Francis, C. (1992). Predisposing factors for

    severe uncontrolled hypertension. *New England Journal of Medicine*, 327, 776-

    781.

Shi, L. (1992). The relationship between primary care and life chances. *Journal of Health*

    Care for the Poor and Underserved, 3, 321–335.

Shi, L. (1994). Primary care, specialty care, and life chances. *International Journal of*

    Health Services, 24, 431– 458.

Shi, L., & Stevens, G. (2010). *Vulnerable populations in the United States*. San

    Francisco, CA: Jossey-Bass.

Singariya, M. (2012). The demographic dividend: Evidence from districts of Rajasthan.

    International Journal of Management and Business Studies, 2(3), 51-54.

Singer, B., & Manton, K. (1998). The effects of health changes on projections of health

    service needs for the elderly population of the United States. *Proceedings of the*

    National Academy of Sciences, 23, 321-35.

Siu, A., Leibowitz, A., Brook, R., Goldman, N., Lurie, N., & Newhouse, J. (1988). Use

    of the hospital in a randomized controlled trial of prepaid care. *Journal of the*

    American Medical Association, 259, 1343-1346.

Sox, C., Swartz, K., Burstin, H., & Brennan, T. (1998). Insurance or a regular physician:

    Which is the most powerful predictor of health care? *American Journal of Public*

    Health, 88 (3), 364–370.

Starfield, B. (1992). Primary care: Concept, evaluation, policy. Oxford, England: Oxford

    University Press.

Starfield, B., Shi, L., & Mackino, J. (2005). Contribution of primary care to health

    systems and health. *Milbank Quarterly,* 83(3), 457-502.

Statistical Institute of Jamaica (STATIN). (2001). *Population and Housing Census 2001:*

    General report, volume 1. Retrieved from http://statinja.gov.jm/Popcensus.aspx

Statistical Institute of Jamaica (STATIN). (2011). *Population and Housing Census 2011:*

    General report, volume 1. Retrieved from

    http://www.jis.gov.jm/pdf/General%20Report%20Census%202011%20Revised

    %20Copy%20Oct.%2019.pdf

Stein, C., & Moritz, I. (1999). A life course perspective of maintaining independence in

    older age. *World Health Organization*. Retrieved from

    http://whqlibdoc.who.int/hq/1999/WHO_HSC_AHE_99.2_life.pdf.

Stewart, T. (2009). *The Elderly: Sixty years and beyond. Bridging the generation gap.*

    National Library of Jamaica: Press Box Printers.

Stuck, A., Walter, J., Nikolaous, T., Bula, C., Hohmann, C., & Beck, J. (1999). Risk

    factors for functional status decline in community living elderly people: A

    systematic literature review. *Social Science and Medicine*, 48, 445–469.

Taylor, H., & Leitman, R. (2001). Out-of-pocket costs are a substantial barrier to

    prescription drug compliance. *Healthcare News*, 1(31). Retrieved from

    http://www.harrisinteractive.com/news/newsletters/healthnews/HI_HealthCareN

    ews2001Vol1_iss32.pdf

Thane, P. (1978). The muddled history of retiring at 60 and 65. *New Society*, 45 (826),

    234-236.

Thrall, J. (2005). Prevalence and costs of chronic disease in a health care system

    structured for treatment of acute illness. *Radiology*, 235, 9-12.

Tinetti, M., Speechley, M., & Ginter, S. (1988). Risk factors for falls among elderly

    persons living in the community. *The New England Journal of Medicine*, 319,

    1701–1707.

Tinetti, M., & Williams, C. (1998). The effect of falls and fall injuries on functioning in

    community- dwelling older persons. *Journal of Gerontology Series A: Biological*

    Sciences and Medical Sciences, 53, M112-M119.

Tinetti, M., McAvay, G., & Claus, E. (1996). Does multiple risk factor reduction explain

      the reduction in fall rate in the Yale FICSIT trial? *American Journal of*

      Epidemiology, 144, 389–399.

Tinetti, M. (2003). Preventing falls in elderly persons. *New England Journal of Medicine*,

      348, 42-49.

United Nations. (nd). Global Issues: Ageing. Retrieved from

      http://www.un.org/en/globalissues/ageing/.

United Nations. (1992). Proclamation on ageing. Retrieved from

      http://www.un.org/documents/ga/res/47/a47r005.htm.

United Nations. (1999). UN principles for older persons. Retrieved from

      http://www2.ohchr.org/english/law/pdf/olderpersons.pdf.

United Nations. (2002a). World population ageing: 1950-2050. Retrieved from

      http://www.un.org/esa/population/publications/worldageing19502050/.

United Nations. (2002b). Madrid plan of action on ageing. Retrieved from

      http://www.un.org/ageing/documents/building_natl_capacity/guiding.pdf.

United Nations. (2002c). World Economic and Social Survey 2002: Trends and policies

      in the world economy. New York: United Nations Publishing.

United Nations Economic and Social Commission for Asia and the Pacific. (2000). The

      United Nations principles for older persons. Retrieved from

      http://www.unescap.org/ageing/res/principl.htm.

United Nations Population Fund and Help age international. (2011). Overview of

      available policies and legislation, data and research, and institutional

      arrangements relating to older persons - progress since Madrid. Report compiled

in preparation for the State of the World's Older Persons 2012. Retrieved from

http://www.unfpa.org/webdav/site/global/shared/documents/publications/2011/O

lder_Persons_Report.pdf.

United States Department of Health and Human Services & United States Department of

Labor. (2003). The future supply of long-term care workers in relation to the

aging baby boom generation: Report to Congress. Retrieved from

http:aspe.hhs.gov/daltcp/reports/ltcwork.htm.

University of California Los Angeles (UCLA) School of Public health. (n.d.). Manual of

C-Survey 2.0 software. Retrieved from

http://www.ph.ucla.edu/epi/programs/csurvey2_manual.pdf

Veterans Affairs Canada (VAC) (2002). You can prevent falls: Step forward with

confidence. Fall prevention information for Veterans and Seniors. Retrieved

from

http://www.vac-acc.gc.ca/clients/sub.cfm?source=health/fallsp/fallprevbroc.

Viljanen, A., Kulmala, J., Rantakokko, M., Koskenvuo, M., Kaprio, J., & Rantanen, T.

(2012). Fear of falling and coexisting sensory difficulties as predictors of

mobility decline in older women. Retrieved from

http://biomedgerontology.oxfordjournals.org/content/early/2012/04/30/gerona.gl

s134.abstract

Von Korff, M., & Goldberg, D. (2001). Improving outcomes in depression. *British*

Medical Journal, 323(7319), 948–9.

Von Strauss, E., Aguero-Torres, H., Kareholt, I., Winblad, B., & Fratiglioni, L. (2003).

Women are more disabled in basic activities of daily living than men only in

very advanced ages: A study on disability, morbidity, and mortality from the Kungsholmen project. *Journal of Clinical Epidemiology,* 56, 669–677.

Weiner, J., & Starfield, B. (1983). Measurement of the primary care roles of office-based physicians. *American Journal of Public Health,* 73, 666–671.

Weiss, L., & Blustein, J. (1996). Faithful patients: the effect of long-term physician-patient relationships on the costs and use of health care by older Americans. *American Journal of Public Health*, 86,1742-1747.

Weissman, J., Stern, R., Fielding, S., & Epstein, A. (1991). Delayed access to health care: Risk factors, reasons, and consequences. *Annals of Internal Medicine*, 144, 325-331.

Weissman, J., & Epstein, A. (1993). The insurance gap: Does it make a difference? *Annual Review of Public Health*, 14, 243-270.

Whittle, J., Lin, C.J., Lave, J., Fine, M., Delaney, K., Joyce, D., & Kapoor, W. (1998). Relationship of provider characteristics to outcomes, process, and costs of care for community-acquired pneumonia. *Medical Care*, 36(7), 977-987.

Wilks R. (2007). Hypertension in the Jamaican Population. A presentation to the Trinidad & Tobago National Consultation on Chronic Non-Communicable Diseases, September 2007. Available at http://www.health.gov.tt/documentlibrary/downloads/17/ProfRainfordWilks-JamaicaTT-CNCDs.pps Accessed May 19, 2008

Wilks, R., Younger, N., Tulloch-Reid, M., McFarlene, S., & Francis, D. (2009). *The Jamaica health and lifestyle survey 2007-2008.* Retrieved from http://www.mona.uwi.edu/reports/health/JHLSII_final_may09.pdf

Williams, J., Gerrity, M., Holsinger, M., Dobscha, S., Gaynes, B., Dietrich, A. (2007).

    Systematic review of multifaceted interventions to improve depression care.

    General hospital Psychiatry, 29, 91-116.

World Bank. (2005). A time to choose: Caribbean development in the 21st century.

    Retrieved from

    http://siteresources.worldbank.org/LACEXT/Resources/317250LAC.pdf.

World Bank. (2009). Millennium Development Goals: Jamaica country profile. Retrieved

    from http://www.jm.undp.org/millenium-development-goals/ja-progress-toward-

    the-mdgs.

World Heath Organization. (n.d.). Steps in applying probability proportional to size

    (PPS)

    and calculating basic probability weights. Retrieved from

    http://www.who.int/tb/advisory_bodies/impact_measurement_taskforce/meetings

    /prevalence_survey/psws_probability_prop_size_bierrenbach.pdf

World Health Organization. (n.d.). Health statistics and health information systems:

    Definition of an older or elderly person. Retrieved from

    http://www.who.int/healthinfo/survey/ageingdefnolder/en/index.html.

World Health Organization. (1978). Primary health care: Report of the International

    Conference on Primary Health Care*,* Alma-Ata. Retrieved from

    http://www.unicef.org/about/history/files/Alma_Ata_conference_1978_report.pd

    f.

World Health Organization. (2000a). The implications for training of embracing a life

    course approach to health. Retrieved from

    http://www.who.int/ageing/publications/lifecourse/alc_lifecourse_training_en.pd

    f.

World Health Organization. (2000b). Health systems: Improving performance. *The World*

    Health Report 2000. Retrieved from

    http://www.who.int/whr/2000/en/whr00_en.pdf.

World Health Organization. (2001). Mental Health: New understanding new hope. *The*

    World Health Report 2000. Retrieved from

    http://www.who.int/whr/2001/en/whr01_en.pdf.

World Health Organization. (2002). Active ageing policy framework. Retrieved from

    http://whqlibdoc.who.int/hq/2002/who_nmh_nph_02.8.pdf.

World Health Organization. (2004a). Active ageing : Towards age friendly primary

    health care. Retrieved from

    http://whqlibdoc.who.int/publications/2004/9241592184.pdf

World Health Organization. (2004b). What are the main risk factors for falls

    amongst older people and what are the most effective interventions to prevent

    these falls? Retrieved from

    http://www.euro.who.int/__data/assets/pdf_file/0018/74700/E82552.pdf.

World Health Organization. (2007). Global report on falls prevention in older age.

    Retrieved from

    http://www.who.int/ageing/publications/Falls_prevention7March.pdf.

World Health Organization. (2008). Age friendly primary health care centres toolkit.

Retrieved from http://www.who.int/ageing/publications/Age-Friendly-PHC-

Centre-toolkitDec08.pdf.

World Health Organization. (2010). Global status report on non-communicable diseases.

Retrieved from http://www.who.int/nmh/publications/ncd_report_full_en.pdf.

World Health Organization. (2011). Non-communicable disease country profiles:

Jamaica. Retrieved from http://www.who.int/nmh/countries/jam_en.pdf.

World Health Organization. (2012). Policies and priority interventions for healthy ageing.

Retrieved from

http://www.euro.who.int/__data/assets/pdf_file/0006/161637/WHD-Policies-

and-Priority-Interventions-for-Healthy-Ageing.pdf.

World Health Organization. (2013). Health financing: Health expenditure ratios data by

country Retrieved from http://apps.who.int/gho/data/node.main.485.

World Health Organization & Health Evidence Network. (2004). What are the

advantages and disadvantages of restructuring a health care system to be more

focused on primary care services? Retrieved from

http://www.euro.who.int/__data/assets/pdf_file/0004/74704/E82997.pdf.

Wray, L. & Lynch, J. (1998). The role of cognitive ability in links between disease

severity and functional ability in middle-aged adults. *Annual Meetings of the

Gerontological Society of America*.

Xu, K., Saksena, P., & Evan, D. (2010). Health financing and access to effective

    interventions. *World Health Report.* Retrieved from

    http://www.who.int/healthsystems/topics/financing/healthreport/8Accesstocare.p

    df.

Zung,W., Richards, C., & Short, M. (1965). Self-rating Depression Scale in an outpatient

    clinic: Further validation of the SDS. *Archives of geriatric Psychiatry*, 13, 508-

    515.

Zunzunegui, M., Alvarado, B., Beland, F., & Vissandjee, B. (2008). Explaining health

    differences between men and women in later life: A cross-city comparison in

    Latin America and the Caribbean. *Journal of Social Science and Medicine*, 68,

    235-242.

Zuvekas, S., & Weinick, R. (1999). Changes in access to care, 1977-1996: The role of

    health insurance. *Health Services Research*, 34, 271-279.

APPENDIX A : ETHICAL APPROVAL FOR STUDY

PROJECT NUMBER: 2013-10464-0
TITLE OF STUDY: The development of a national health policy for the elderly in Jamaica
PRINCIPAL INVESTIGATOR: Dr. Joel M. Lee
CO-PRINCIPAL INVESTIGATOR: Ms. Kathryn Mitchell

Dear Joel and Kathryn,

The University of Georgia (UGA) Human Subjects Office has reviewed the project identified above. It has determined that this proposed analysis of data/information that is not individually-identifiable does not meet the regulatory definition of *human subjects* under Title 45 CFR 46.102 (i.e., *a living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information*). This project, therefore, does not require review and approval by the UGA Institutional Review Board (IRB).

This opinion covers only this request and does not include any other future research or activity that may involve human participants. Please keep this email for your records, and notify our office of any changes to the project that might affect the original determination.

Good luck with the study, and please feel free to contact our office for any research endeavors involving human subjects that you may be conducting in the future.

Best regards,

Benil

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APPENDIX B : ELDERLY STUDY PROPOSAL, JAMAICA

Study of Older Persons in Jamaica, 2011

Prof. Denise Eldemire-Shearer & Mona Ageing & Wellness Centre

Professor of Public Health and Ageing

Department of Community Health and Psychiatry

University of the West Indies (UWI), Mona, Jamaica

2011

Team

Dr. Kenneth James

Dr. Desmalee Nevins

Dr. Hazel Laws

Dr. Chloe Morris

Ms. Douladel Willie

Introduction

The Caribbean is experiencing population ageing. Increasingly health and social services are challenged to meet the needs of this population. In addition, there is an increase in chronic disease and an increased awareness of the need to reduce the burden of these diseases. The gap between the needs of the elderly and the availability of services is the result of historical, social, economic and organizational factors (Eldemire, 1993). When planning and foresight is informed by and rooted in poignant research, the gap can be reduced and the overall welfare of older persons enhanced by appropriate policies and programs.

Growth of Jamaica's older population (conventionally persons age 60 years and over) is now recognized as a significant demographic feature. (Planning Institute of Jamaica and Statistical Institute of Jamaica, 2010). The older population, its demographic profile and needs, are constantly evolving. The current population of approximately 300,000 (11%) (Planning Institute of Jamaica, 2011) is projected to increase to 450,000 by 2025 (UN.org, n.d.). Additionally the fastest growing age group, the 80+ has been recognized as having greatest need (Fast, 2005). Changing environments, social and economic forces both locally and internationally have created new problems and challenges to older persons and their caregivers. Simultaneously, those environments generate opportunities and potential solutions, if the nature and extent of the challenges, as well as, current contexts are understood. Awareness of care issues faced by older persons has increased and while there have been some programmatic interventions to address such issues (e.g. JADEP, NI-Gold); there is work to be done including age specific health promotion and prevention.

The management of chronic disease at all levels has become a focus of health service delivery. A cornerstone of the approach in Jamaica must be prevention, which for the older population includes secondary and tertiary prevention. To be successful, the approach in older persons needs to be age-specific, with different messages and media formats including larger print. It needs to be tailored to persons who already have at least one chronic disease and to emphasize improving health and preserving functional independence. Persons with chronic conditions and diseases have increased risk of mortality, hospital admissions and have increased caregiving requirements due to frailty and disability. Functional limitations can further complicate and reduce access to health care and interfere with self management. Adequately addressing these concerns may require significant even staggering resource inputs.

The Caribbean has been a fervent advocate for action to improve the health and social status of older persons and will play a critical role in September 2011 at the UN Summit on Non-communicable Disease. A study of older persons, their health, social status and needs is therefore timely and will complement ongoing initiatives.

Understanding the current situation of older persons, and ascertaining emerging challenges such as dementia, amidst rapid population ageing, has the potential to meaningfully inform policy and guide the development of programs and initiatives that respond to current needs. Jamaica has been a leader among developing countries with regard to attention given to older persons' issues. However, one cannot simply rest complacently on past achievements. If the UN principles espoused at the 46th General Assembly of the United Nations Jamaica are to be realized (independence, participation,

care, self-fulfillment and dignity) research and action on issues pertaining to older persons must be sustained.

Justification

The study being proposed is needed for the review of the National Policy on Older Persons and the development of appropriate heath policies and programs; bearing in mind that:

- significant demographic shifts and rapid population ageing have occurred and continue to occur since the last study in 1990;

- the ongoing epidemiological transition, the predominance of chronic non-communicable disease and associated health care challenges and costs especially affect older persons;

- emerging issues such as dementia and associated caregiving issues have been understudied in the Jamaican setting;

- there is a major current initiative globally to reduce the impact of chronic disease;

- the impact of the introduction of no-user fees on older persons is unknown;

- age-friendly approaches to Primary Health Care are being espoused;

- the imperative to identify how to improve JADEP participation and to document needs for both JADEP and NHF programs;

- recent population-based epidemiological surveys on lifestyle behaviors in Jamaica though excellent in analytic quality and methodological design have been limited to persons 15–74 yrs. They have thus excluded persons 75 years

and over who number more than 87,000 persons and constitute a conspicuous 33.04% percent of older persons;

- there is need for current data on the geriatric giants (falls, immobility, memory loss and incontinence) to inform health care planning;

- a new cohort of persons with likely differing needs and challenges have now become part of the 60+ age-group since the last comprehensive report 20 years ago. Future cohorts may also be different;

- urban/rural and socioeconomic differentials affect the welfare of the elderly and their access to health care and other services.

A previous study (Eldemire 1993) was the springboard for development and elaboration of Jamaica's landmark National Policy for Senior Citizens in 1997. Importantly, this proposed study will not only build on previous work but will contribute to future development of time series data which can be subsequently analyzed and used to forecast of future directions and trends. An important contribution of this study will be the gender-specific analysis. There is some available information on the lack of participation in health related activities by men (Morris, 2009; Archer & Finn, 2011) and yet they do have illnesses later in life (Morris, 2009). Gender analysis facilitates pointed policy and program development at national level, benefiting older persons, as well as, younger generations, as they too ultimately will age.

Consequences if study is not done

All across the world, national institutions are called upon to develop social security systems, **ensure greater equity** and **solidarity between and within generations** and **provide support** to older persons. A major objective is the **enhancement of self-**

reliance among older persons so that they can lead **healthy and productive lives** and can benefit society by making full use of the skills and abilities they have acquired in their lives. Equally important is **strengthening of formal** and informal support systems and safety nets for older persons; all of which **promote the welfare of older persons** (ICPD, 1995).

Not doing this project would hinder achievement in any of the domains previously highlighted in bold in the preceding paragraph. The Commission for Social Development of the United Nations has reiterated priorities for action, including, strengthening of information, training, research, with regard to older persons. (UN, 2007) Against the background of rapid ageing in Jamaica and the imperatives dictated by the imminent elderly boom, this research is critical. As a society, if not done, there is great risk of ignoring the wind and reaping the whirlwind; potentially finding ourselves lacking in current information, understanding and preparedness for the 'coming of age' of older persons in Jamaica. Indeed, in the absence of this research, the capacity to appropriately respond to issues and make informed choices is jeopardized.

Aims and Objectives

This study aims to:

1. assess the health and social status of older persons in Jamaica

2. identify needs of older persons in Jamaica

The objectives are:

(1) to describe the demographic characteristics of Jamaican older persons.

(2) to determine the socioeconomic and general conditions of older persons.

(3) to describe the health status and health care utilization patterns of older persons.

(4) to document the prevalence of lifestyle factors known to contribute to chronic disease among older persons

(5) to assess the profile of older persons with regard to hemoglobin levels, blood glucose levels, blood lipids and cholesterol;

(6) to ascertain the utilization of JADEP, NHF NI-Gold and to identify positive and negative factors affecting utilization;

(7) to describe the mental status and cognitive function of older persons and to ascertain the prevalence of depression and dementia among the study population;

(8) to determine the levels and kinds of caregiving among the older persons and their perceived needs;

Methodology

The study has three (3) components and will utilize both quantitative and qualitative research methods. The research team (led by Professor Denise Eldemire-Shearer who was the principal investigator in the first comprehensive epidemiological survey on older persons in Jamaica) will be comprised of members of the Mona Ageing & Wellness Centre, Department of Community Health and Psychiatry, University of the West Indies.

Component I   Community Survey

Quantitative

A cross-sectional study will be done encompassing the parishes of Kingston, St. Catherine and St. Thomas. These parishes have been selected as St. Catherine has been documented to have a profile said to be representative of much of Jamaica while the other parishes provide the constituent elements for contrasting the health and social status of

older persons in predominantly urban (Kingston & St. Andrew) and rural (St. Thomas) settings. The sample will be drawn from the population of communities within the parishes of Kingston, St. Andrew, St. Catherine and St. Thomas which, based on the 2001 census, is estimated to be about 1,223,792. Of this number, 108,311 are persons 60 years old and over. A two-stage cluster sampling methodology (similar to World Health Organization (WHO) cluster sampling practices) with probability proportional to population size to draw a sample of households using the enumeration district as the unit of randomization for the house to house survey. Consistent with WHO common cluster survey sampling principles, 35 was determined as an adequate number of clusters (cluster sampling technique minimum =25).

The C-SURVEY computer software program (jointly developed by the University of California, Los Angeles and the University of Jakarta) has been used to calculate the sample size and the number of interviews per cluster. Based on the prevalence of hypertension (0.69 or 69% as reported by Wilks (2007) based on a 2001 survey deemed to be representative of the island), and the distribution of enumeration districts in the regions of interest, it was determined that 76 interviews in each of 35 clusters (enumeration districts) would be needed, yielding of a total of 2660 interviews. For the calculation, the usual 95% confidence interval and p= 0.05 were used. (See Appendix I for more details). The two stage cluster sampling procedure is further outlined in Appendix II.

A questionnaire will be used as one of the instruments in this survey. The questionnaire (see Appendix III) will elicit data including but not limited to:

i. Demographic information

ii. Education, socio-economic status, labour force participation

iii. Medical history

iv. Health status and quality of life

v. Income and Sources of Income, Expenditure for specific items and services

vi. Reported needs and caregiver arrangements

vii. Smoking habits

viii. Alcohol consumption

ix. Levels of physical activity

x. Symptoms and disease conditions (self-reported)

xi. Injuries (e.g. falls, motor vehicle accidents, other)

Additionally, other standard instruments e.g. for screening for the 'geriatric giants' and instruments such as Activities of Daily Living (ADL) evaluation tool, and abridged Mini-Mental Status screens will be administered to the sample. Blood pressure measurements will be done for all participants in the study. For estimation of blood parameters related to hemoglobin, glucose (glycosylated hemoglobin), cholesterol profile (cholesterol, HDL, LDL, VLDL), measurements will be carried out on a randomly selected four hundred persons. The sample size here was calculated assuming the 95% confidence level, 5% error margin and prevalence rates of 50% which statistically yield the minimum required sample size of 384 (approximately 400).

On the aforementioned randomly selected sub-sample of four hundred persons, screening to identify levels of depression will be done. The Zung screening instrument (see Appendix IV) which has been validated for use in settings such as ours and is in the public domain will be used to screen for depression.

Qualitative

Twelve focus groups discussions will be done in order to investigate issues of interest related to need. Eight will be conducted among older persons (2-male, 2-female) in both urban and rural settings. The remaining four (2 urban and 2 rural) will be conducted among caregivers. The issues to be explored include perspectives on needs; the range of needs, priority needs, how they perceive needs and prioritize them. Their views of strategies to address overall needs including health needs will be elicited. The information so obtained will guide the development of programs and help provide participatory solutions to identified issues. Additionally, such an approach promotes involvement of older persons as well as their caregivers, both of whom are key stakeholders in any efforts to address the health and welfare of older persons. Indeed, it is likely to foster rapport, and enhance support for any intervention programs if such were to ensue.

Component II   Health Status of Older Men

Recent research (Morris, 2009) suggests that a significant proportion of older men do not utilize health services as would be expected. Additionally, there are many who report no chronic disease but who have symptoms that may indicate underlying disease and which have not been detected because such men have not visited a health provider to have their health status assessed. This component proposes to do a health assessment of

older men who report no recent utilization of health care services and no chronic disease and in order to identify their health status.

The main objectives of this component are to among older men not reporting chronic disease that have not visited a health provider in 12 months prior to the survey:

- ascertain health status

- determine the proportion who on assessment by a health provider are determined to have significant medical problems or chronic disease.

- identify the proportion of such men who are registered with JADEP or NHF

Based on the 2001 population census, 46.4% of the 60 and over population is male. Consequently, among the 2660 study participants, 1234 men are expected. Using the data from Morris (2009), it is expected that about 70% of older men will not have had a health check in the 12 months preceding the study. Thus 863 such men are expected to be identified. Furthermore according to Morris (2009), about 50% of these men are expected to report symptoms known to be associated with chronic disease such as hypertension and diabetes mellitus. Using the above data, 300 randomly chosen men of the 863 will be assessed. (The online sample calculator at www.raosoft.com was used to calculate the minimum sample size required (267) assuming the usual 95% confidence interval and margin of error of 5%)

Quantitative

A medical exam, anthropometric and clinical measurements will be done.

The blood indices will include hemoglobin, glucose (glycosylated hemoglobin), cholesterol profile (cholesterol, HDLL, LDL, VLDL), and Prostate Specific Antigen levels.

Qualitative

Four (4) focus group discussions (2-rural; 2-urban) will be done to investigate the issues around seeking health care. The distinct groups will comprise men who had not sought health care in the last 12 months (1 rural, 1urban) and men who did go for care within the last 12 months (1 rural, 1urban). Focus group members will be recruited from the wider community sample.

Component III -.Dementia

This component will focus on persons scoring below the critical threshold for the cognitive impairment (based on MMSE from Component I). The primary objectives are:

- To identify the prevalence of dementia among those having low MMSE scores (score < 24)

- To explore the etiology of dementia among older persons so diagnosed, by the use of:

  1. MRI- magnetic resonance imaging of the brain

  2. Blood assays: namely Cholesterol /Triglyceride levels, VDRL status, Vitamin B12 levels, Thyroid hormone levels

● To identify and investigate caregiving issues associated with dementia.

A pilot study (Neita, 2011) has indicated that approximately 15% of older persons can be expected to have a low MMSE score and this has been used to calculate the number of persons expected for Component III of the study. The number of participants for Component 3 is expected to be approximately 400 (15% of 2660) and based on Neita

(2011) about 150 will require and be eligible for MRI studies. This study is also planned as a starting point for a cohort of persons who will be followed over time (5 years) to ascertain progression/change in cognitive function.

For those having low MMSE scores (scores < 24), a diagnostic evaluation will be performed to identify those with dementia. A score of less than 24 is being used in this study consistent with the widely accepted classification of severity by Tombaugh and McIntyre (1992); i.e. none (24-30); mild (18-23) and severe (0-17).

Diagnosis of dementia will determined according to DSM-IV-TR criteria [4] The diagnosis of dementia will be aided by use of the following:

- Clinical Diagnostic Assessment Procedure for Dementia (CDAPD) which includes:

  - Orientation-Memory-Concentration Test (OMCT)
  - Clinical History
  - CLOX Executive Clock Drawing Task

Clinical and Diagnostic Assessment Procedure for Dementia

Clinical and neuropsychological evaluation instruments will be used from the Clinical Diagnostic Assessment Procedure for Dementia (CDAPD) (Hendrie et al, 1995), a version of the Consortium to Establish a Registry for Alzheimer's Disease (CERAD) protocol (Morris et al, 1989) which has previously been used in Jamaica (Unverzagt et al, 1999). The assessment instruments of the CDAPD include the Orientation-Memory-Concentration test, a clock drawing test and a clinical history module. The CDAPD also includes directed neurological examination, laboratory testing and neuro-imaging. Diagnostic algorithms consistent with DSM-IV-TR (American Psychiatric Association,

2000) were substituted for the original algorithms which were consistent with DSM-III-R (American Psychiatric Association, 1987). The CLOX 1 test was substituted for the clock drawing test in the original CDAPD as that test had no scoring protocol. The assessment instruments used are described below.

Orientation-Memory-Concentration Test

The Orientation-Memory-Concentration Test (OMCT) (Katzman et al, 1983) (otherwise referred to as the Short Blessed Test or Blessed OMC Test) is a short adaptation of the Information-Memory-Concentration Mental Status Test (IMCT) (Blessed et al, 1968). The OMCT contains six items assessing the three domains of cognition named in its title, and is simple to administer and score. Test scores indicating cognitive impairment have been shown to correlate with progression in clinical severity and with cerebral cortex amyloid plaque counts at autopsy (Katzman et al, 1983). Performance on each item is given a weighted score, with the memory component weighted highest. Scores range from 0 to 28 with higher scores indicating worse cognitive performance; a cut-off score of 11 was used for this study as scores above 10 are consistent with dementia (Katzman et al, 1983).

Clinical History

The clinical history module of the CDAPD comprises a structured interview (Hall et al, 2000), in the framework of the DSM-IV-TR (American Psychiatric Association, 2000) and the ICD-10 (World Health Organization, 1992) diagnostic criteria for dementia, to evaluate symptoms of cognitive impairment in the domains of memory, language, personality, judgment and reasoning. It also assesses for functional impairments in activities of daily living, namely food preparation, self-care, household

chores, financial management and social activity. It obtains information on the presence

of risk factors for cognitive impairment, such as depression, medical disorders,

medications and other substance use, and family history.

Clinical history was preferentially obtained from reliable informants (Morris et al,

1989; Knopman et al, 2003; Hendrie et al, 2006) but it is recognized that, not

uncommonly, elderly persons live alone and are unable or decline to give the name of an

informant who can be contacted (Hendrie et al, 2006; Alzheimer's Disease International,

1999) in these cases the history was obtained from the patient, as was done in the Ibadan-

Indianapolis dementia studies (Hendrie et al, 2006).

CLOX Executive Clock Drawing Task

The CLOX Executive Clock Drawing Task (CLOX) (Royall et al, 1998) is a

clock drawing test used to determine impairment in executive cognitive function in

comparison to impairment in visuospatial praxis. Clock drawing tests are rapid,

acceptable to subjects, and have little cultural bias, though they are dependent on

education (Royall et al, 2004; Lourenco et al, 2008; Ainslie & Murden, 1993). The test

comprises, first, spontaneous drawing of a clock after receiving an instruction (CLOX 1)

and then, copy of a clock drawn by the interviewer (CLOX 2). Performance on both tests

is related to visuoconstructive ability but CLOX 1 performance is more indicative of

executive functioning as it poses additional executive cognitive challenges as the

participant is required to engage in novel, goal-directed activity involving decision-

making and planning, sequencing, organization, and task-monitoring to a greater degree

than CLOX 2. Each clock is rated by a structured scoring system ranging from 0 to 15

(best). Cut-scores are 10 and 12 for CLOX 1 and CLOX 2 respectively (Royall et al, 1998).

CLOX 1 will be used in this study because: its scope of assessment is broader than CLOX 2; it is an indicator of executive cognitive functioning; and its correlation with other standard tests of cognitive function is high.

Four (4) focus groups will be done with caregivers to get further information on the challenges associated with caring for persons with dementia, coping strategies utilized, caregiver burden and burnout and desired support and assistance.

Data Analysis

The quantitative data will be coded and entered into a SPSS version 17.0 database. As appropriate the data will be numerically and graphically summarized using frequencies, measures of central tendency etc. As needed, appropriate testing for statistical significance will be done. The information will then be written up for report compilation. With regard to the qualitative aspects of the study, following transcription of focus group material, the information will be subject to thematic analysis. After subsequent charting and interpretation and synthesis, relevant inferences will be made and used for report compilation.

Ethical Considerations

The research will be carried out adhering to established standards and practices of ethical research. Ethical approval for the study has been obtained from the Faculty of Medical Sciences/UHWI Ethics Committee. Informed consent will be obtained from study participants of their legal guardians/caregivers. Participants will be informed of

any test results and advised to share those results with their usual health care practitioners.

Activities and Timelines

It is anticipated that the survey, data analysis and an ensuing report will be completed in approximately 22 months from the project start date. Some preliminary data will be made available at 6 and 12 months post start date. Appendix V details activities and associated timelines in a Gantt Chart. For improved efficiency, the components do have some overlap and all components should to be completed by August 2012, the duration of the proposed project being 22 months.

Budget

Appendix VI provides summary budgets for all three components of the project. Components I, II and III are estimated to cost J$18.4 million (US$ 219,634), J$11.99 million (US$142,837), and J$12.9 million (US$ 153,722) respectively. Thus the overall cost is approximately J$43.2 million over a period of almost 2 years.

References

Ainslie, N.K. and Murden, R.A. (1993) Effect of education on the clock-drawing
dementia screen in non-demented elderly persons. *J Am Geriatr Soc*, 41 (3), 249-52.

Alzheimer's Disease International. (1999)The demography of ageing around the world.
Alzheimer's Disease International; [cited 2010 August 9]; Available from:
http://www.alz.co.uk/adi/pdf/4demog.pdf.

American Psychiatric Association. Diagnostic and statistical manual of mental disorders:
DSM-III-R. Washington: American Psychiatric Association; 1987

American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-IV-TR. Washington: American Psychiatric Association; 2000.

Archer, MD. and Finn, J. (2011). Helping men make informed decisions. *Trends in Urology & Men's Health, 2*, 8–13.

Blessed, G. Tomlinson, B.E. & Roth, M. (1968) The association between quantitative measures of dementia and of senile change in the cerebral grey matter of elderly subjects. *Br J Psychiatry*, 114 (512): 797-811.

Eldemire D. (1993). An epidemiological study of the Jamaican Elderly. A Thesis submitted in fulfillment of the Requirement of the Doctor Of Philosophy in Public Health, Department of Social and Preventive Medicine, Mona, University of the West Indies.

Eldemire D. (1995). The elderly in Jamaica; a gender and development perspective. **In:** IRDC 1995. Gender, health, and sustainable development: perspectives from Asia and the Caribbean. Proceedings of workshops held in Singapore, 23-26 January 1995 and in Bridgetown, Barbados, 6-9 December 1994, edited by Janet Hatcher Roberts, Jennifer Kitts, and Lori Jones Arsenault. Ottawa, Canada, International Development Research Centre [IDRC], 1995 Aug. :291-6. Available at http://www.popline.org/docs/114691 Accessed May 19, 2008

Eldemire D. (1996). Level of mental impairment in the Jamaican elderly and the issues of screening levels, caregiving, support systems, care persons, and female burden. *Journal of Molecular Neuroscience 28*, (1-3): pp.115-120

Fast, J. (2005). Caregiving: A fact of life. *Transition 35*(2), 4-11. Retrieved May 6, 2011 from

http://www.vifamily.ca/media/node/322/attachments/caregiving_a_fact_of_life.pd
f

Hall, K.S., Gao, S., Emsley, CL., Ogunniyi, A.O., Morgan, O., Hendrie, H.C. (2000).
Community screening interview for dementia (CSI 'D'); performance in five
disparate study sites. *Int J Geriatr Psychiatry* ,15 (6), 521-31.

Hendrie H., Osuntokun B.O., Nurnberger P., Ogunniyi A., Farlow M.R. (1995).Clinical
diagnostic assessment procedure for dementia: Jamaica pilot study.

Hendrie HC, Lane KA, Ogunniyi A, Baiyewu O, Gureje O, Evans R, et al. (2006). The
development of a semi-structured home interview (CHIF) to directly assess
function in cognitively impaired elderly people in two cultures. *Int Psychogeriatr
Dec*; *18* (4): 653-66.

ICPD. Summary of the ICPD Programme of Action. Available at
http://www.unfpa.org/icpd/summary.htm Accessed May 19, 2008

Katzman R, Brown T, Fuld P, Peck A, Schechter R, Schimmel H. (1983) Validation of a
short Orientation-Memory-Concentration Test of cognitive impairment. *Am J
Psychiatry Jun; 140* (6): 734-9.

Knopman DS, Boeve BF, Petersen RC. Essentials of the proper diagnoses of mild
cognitive impairment, dementia, and major subtypes of dementia. (2003). *Mayo
Clin Proc Oct; 78* (10): 1290-308.

Lourenco RA, Ribeiro-Filho ST, Moreira Ide F, Paradela EM, Miranda AS. (2008).The
Clock Drawing Test: performance among elderly with low educational level. *Rev
Bras Psiquiatr Dec; 30* (4): 309-15.

Morris C. (2009). Health Status and Health-Seeking Behaviour of Jamaican Men 55 years and over. Doctoral dissertation, Department of Community Health and Psychiatry, University of the West Indies, Mona, Jamaica.

Morris JC, Heyman A, Mohs RC, Hughes JP, van Belle G, Fillenbaum G, et al. The Consortium to Establish a Registry for Alzheimer's Disease (CERAD). (1989). Part I. Clinical and neuropsychological assessment of Alzheimer's disease. *Neurology Sep; 39* (9): 1159-65.

Neita S. (2010). The Prevalence of Dementia in the Elderly in a Community Sample in Jamaica. Unpublished doctoral dissertation, University of the West Indies, Kingston, Jamaica

Planning Institute of Jamaica and Statistical Institute of Jamaica. (2010). *Jamaica Survey of Living Conditions 2009*. Kingston, 1.2

Planning Institute of Jamaica. (2010). *Economic & Social Survey, Jamaica, 2010*. Kingston, 20.3

Royall DR, Cordes JA, Polk M. (1998) CLOX: an executive clock drawing task. *J Neurol Neurosurg Psychiatry May; 64* (5): 588-94.

Royall DR, Espino DV, Polk MJ, Palmer RF, Markides KS. (2004). Prevalence and patterns of executive impairment in community dwelling Mexican Americans: results from the Hispanic EPESE Study. *Int J Geriatr Psychiatry Oct; 19* (10): 926-34.

Tombaugh TN, McIntyre NJ. (1992).The mini-mental state examination: a

comprehensive review. *J Am Geriatr Soc Sep; 40* (9): 922-35

UN (2007) Social and Humanitarian Assistance Aging and the elderly. Available at

http://www.nationsencyclopedia.com/United-Nations/Social-and-Humanitarian-

Assistance-AGING-AND-THE-ELDERLY.html Accessed May 16, 2008

UN.org. (n.d). Country profile: Status and implementation of national policies on ageing

in Jamaica. [cited 2006 September 15]. Available from

http://www.un.org/esa/socdev/ageing/workshops/vn/jamaica.pdf Accessed May

19, 2010

Unverzagt FW, Morgan OS, Thesiger CH, Eldemire DA, Luseko J, Pokuri S, et al.

Clinical utility of CERAD neuropsychological battery in elderly Jamaicans.

(1999). *J Int Neuropsychol Soc Mar; 5* (3): 255-9.

World Health Organization. The ICD-10 classification of mental and behavioural

disorders: clinical descriptions and diagnostic guidelines. Geneva: World Health

Organization; 1992.

Wilks R. (2007). Hypertension in the Jamaican Population. A presentation to the Trinidad

& Tobago National Consultation on Chronic Non-Communicable Diseases,

September 2007. Available at

http://www.health.gov.tt/documentlibrary/downloads/17/ProfRainfordWilks-

JamaicaTT-CNCDs.pps Accessed May 19, 2008