Self-Reported Health Conditions, Self-Rated Health Status and Health-Care Seeking Behavior of Older Elderly in an English-Speaking Caribbean Nation

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Abstract: *Introduction*: Many studies have examined self-rated health status, functional capacity, lifestyle and living arrangements of elderly people (ages 60+ years); but none emerged in a literature search on self-rated health status, health-care seeking behavior, medical expenditure and self-reported health conditions of elderly people 80+ years old.

Aims: This research, aims to provide information on the typology of acute and chronic diseases affecting the 80+ year population in Jamaica; ascertain whether there are shifts in the typology of dysfunctions over a 6-year period (2002-2007); examine the likely association between self-rated health status and self-reported dysfunctions; determine demographic differences in self-rated health status; examine likely relationship between self-rated illnesses and health-care seeking behavior; evaluate shifts in self-reported health conditions over a 6-year period, and calculate the elasticity of health-care seeking behavior, with reference to income and health insurance coverage.

Method: The current study extracted a sub-sample of 566 and 159 elderly people 80+ years from the dataset of the Jamaica Survey of Living Conditions for 2002 and 2007 respectively.

Results: Forty-nine percent of the samples reported an illness in 2007 and of those whom indicated an illness; the majority reported having chronic non-communicable conditions. Generally, the typologies of self-reported health conditions have remained the same. Diabetes mellitus had the greatest percentage of increase (550%) among those with chronic health conditions. Comparatively, 17% reported at least good health status and 39% indicated at least poor health status.

Conclusion: The findings for this work can be the framework for policy intervention, understanding of the aged cohort and meeting the needs of the 80+ elderly population.

Keywords: 80+ year olds, Caribbean, developing nation, elderly people, health-care seeking behavior, health conditions, health status, health transition, public health.

INTRODUCTION

Many Latin American and Caribbean scholars have extensively examined various issues relating to elderly people. For example, Eldemire [1-6]; Grell [7]; Lawson [8]; Hambleton *et al*. [9]; Brathwaite [10, 11]; Bourne *et al*. [12-15]; Alvarado *et al*. [16]; and others [17-20] are among those who have contributed to the ageing discourse in the Region. Bourne [12, 13, 15], Hambleton *et al*. [9] and Menéndez *et al*. [20] have evaluated determinants of health for elderly people in the Caribbean and/or Latin America with only Bourne [15] having investigated self-reported health of old-to-oldest elderly people (ages 75+) [15]. While Hambleton *et al*. [9] and Menéndez *et al*. [20] have researched self-rated health status, self-rated health conditions and functional capacity of people 60+ years, Bourne's study [15] on self-rated health and self-reported health conditions of people 75+ provide insights into those people who are close to and- or having surpassed the life expectancy in their country. This means that there is a gap in the literature on health matters of people 80+ years, with emphasis on whether there is a change in the typology of illnesses among this age cohort.
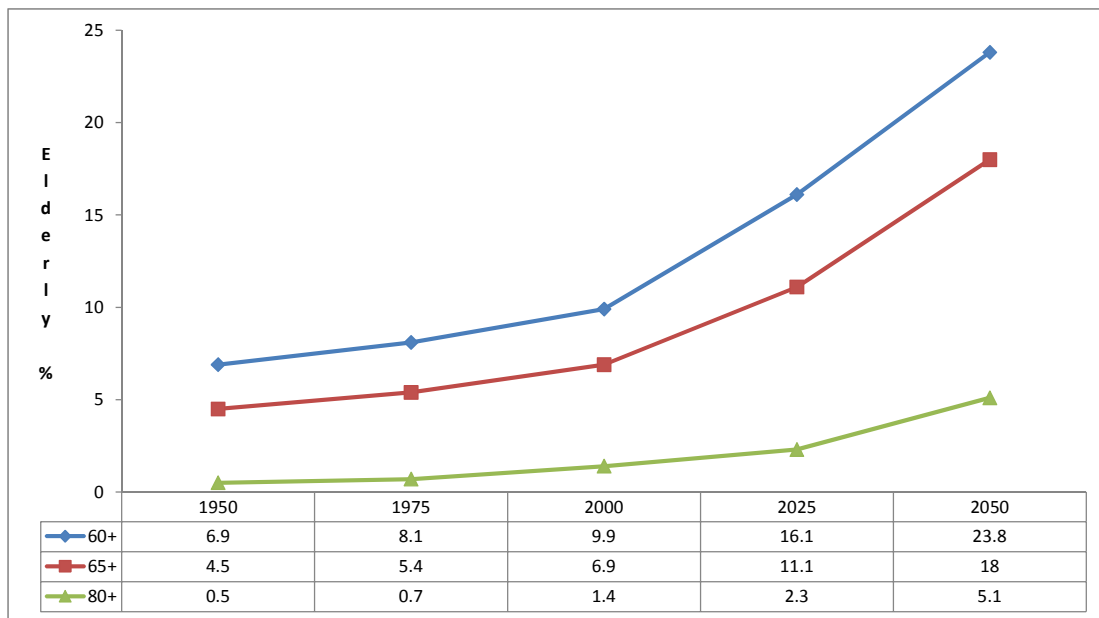
Most of the previous studies treat the health challenges faced by elderly people as though they are the part of the life

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cycle. Using statistics for 2000, there were 1.4% of the Caribbean population 80+ years, 1.8% in Jamaica, 0.9% in Caribbean and Latin America and 6.9% in the World [21]; yet still researchers continue to pay more attention to 60+ age cohort, without disaggregating the data into the stages of ageing. Based on Figs. (**1**, **2**), the rate of growth in the population 60+ years is greater than that for the 65+ and 80+ years in the Caribbean as well as in Jamaica; but this does not mean that the 80+ age cohort should be excluded from scientific research.
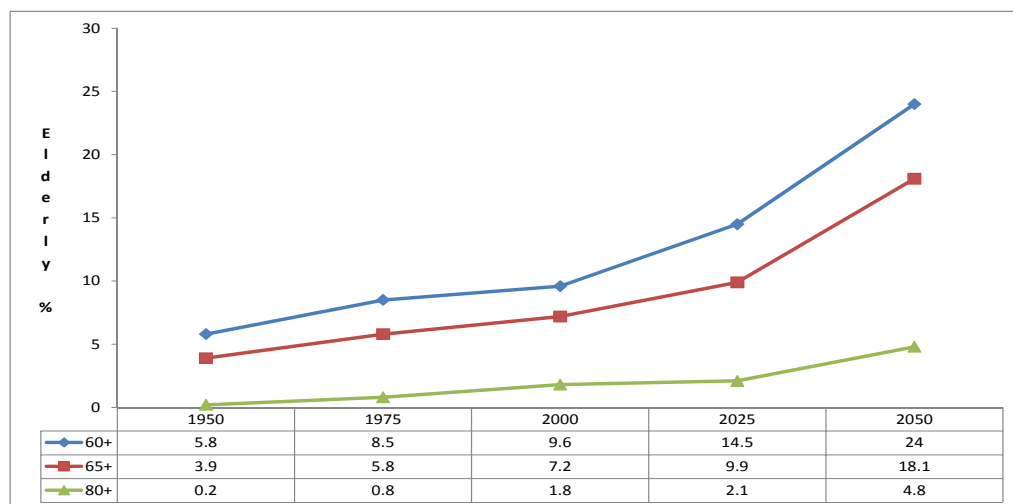
Data from the Statistical Institute of Jamaica showed that mortality for those who are 75+ years, and not those who are 80+ years [22], which appears to be equal to the same across the Caribbean. Mortality, which is used to compute life expectancy, is therefore not presented for those 80+ years. In

fact, there is no information on self-rated health status or self-reported health conditions on those in this age cohort. Statistics from Pan American Health Organization (PAHO) [23] presented information on self-rated health of people 60+ years, however, no data is available on the 80+ population. Bourne indicated that health problems, health conditions and health-care care seeking behavior (i.e., health demand) increases with ageing [24], suggesting that aggregating all elderly people (60+ years) will not provide the health practitioner with a better understanding of those 80+ years old. Data from the Planning Institute of Jamaica and the Statistical Institute of Jamaica found that aged Jamaicans had the greatest number of hospital visits and health conditions than all other ages combined [25], which gives importance of furthering our understanding of those 80+ years old. Concomitantly, 37.9% of all new diabetic cases and 39.8%

	1950	1975	2000	2025	2050
60+	6.9	8.1	9.9	16.1	23.8
65+	4.5	5.4	6.9	11.1	18
80+	0.5	0.7	1.4	2.3	5.1

Source: United Nations (UN). World Population Ageing 1950-2050. New York: 2002.

Fig. (1). Caribbean Elderly people population as a percentage of total population.

	1950	1975	2000	2025	2050
60+	5.8	8.5	9.6	14.5	24
65+	3.9	5.8	7.2	9.9	18.1
80+	0.2	0.8	1.8	2.1	4.8

Source: United Nations, (UN). World Population Ageing 1950-2050. New York: 2002.

Fig. (2). Jamaica Elderly people population as a percentage of total population.

of new hypertensive cases between January and June 2007 observed in public health facilities were accounted for Jamaican seniors (ages 60+ years) [26]. Information on self-rated health status, self-rated illnesses and health-care seeking behavior is required in the literature on people 80+ years, which need urgent resolution.

Many of the studies treat 60+ the same way as 80+ and Bourne [24] outlined that health conditions, functionality and health changes at different stages of ageing (i.e., young-old, old-old or oldest old). Hypertension, diabetes mellitus and arthritis are among the five leading causes of morbidity in the elderly (ages 60+ years) population in Jamaica [27], and this is also the case in Barbados, St. Lucia, Guyana, and Trinidad and Tobago [13, 28]. Apart from a United Nation's publication that has provided statistics on the percentage of people 80+ years old as well as statistics on life expectancy at 80+ years [21], and Bourne's work on the health status of Jamaicans 75+ years [15], the literature is lacking in research related to 1) health status, 2) health-care seeking behavior, 3) rate of seeking health care given that the individual has health insurance (or otherwise), 4) the changing pattern of illnesses of those 80+ years old and 5) the elasticity of health-care seeking behavior, with reference to income and health insurance coverage.

MATERIALS AND METHODS

A sub-sample of 566 and 159 elderly people 80+ years were extracted from datasets provided by Jamaica Survey of Living Conditions (JSLC) for 2002 [29] and 2007 [30], respectively. The JSLC is a national cross-sectional probability survey, which is conducted annually by the Planning Institute of Jamaica (PIOJ) and the Statistical Institute of Jamaica (STATIN). JSLC is usually conducted between April and May each year. PIOJ and STATIN use a self-administered questionnaire which seeks to collect data from Jamaicans on issues ranging from health to social programs. The questionnaire is designed similar to that of the World Bank's Living Standards Measurement Study (LSMS) household survey, with some modifications. The changes to the LSMS were necessary, as JSLC is more focused on policy impacts. The questionnaire covered areas such as socio-demographic variables such as education; daily expenses (for past 7-day); food and other consumption expenditure; inventory of durable goods; health variables; crime and victimization; social safety net and anthropometry [29, 30].

Instead of repeating the sampling design of this study, which is no different from that which is in the literature, we will make reference to other works in which a detailed presentation of sampling frame has been mentioned to which the reader can peruse. The works of Bourne [12, 13, 15] and McGrowder have published a description of the sampling design adapted by PIOJ and STATIN.

The statistical package that was used to store and analyze the data is SPSS for Windows, Version 21.0 (SPSS Inc; Chicago, IL, USA). Percentages and descriptive statistics are done on socio-demographic characteristics of the study. Cross tabulations and Analysis of Variance (ANOVA) are used to examine bivariate relationship of two variables, non-metric and non-metric as well as metric and non-metric (non-dichotomous), respectively. In addition to the aforement-

ioned, elasticity of demand and income elasticity of demand were computed for health status.

Elasticity of demand is an economic terminology that measures consumers' demand responsiveness to changes in particular product attributes such as price. In this paper, the research will examine health insurance elasticity of health-care seeking behavior, and income elasticity of health-care seeking behavior.

Elasticity is calculated as a percentage of change in demand (in this case health-care care seeking behavior) divided by the percentage change in 1) health insurance; 2) income (i.e., total annual expenditure).

Elasticity of health-care seeking behavior with reference to health insurance = $\% \Delta \text{ HSB} / \% \Delta \text{ HI}$

Where HSB is health-care-seeking behavior and HI is health insurance coverage.

Elasticity of health-care seeking behavior with reference to income = $\% \Delta \text{ HSB} / \% \Delta \text{ Y}$

In which Y is income (proxy by total annual expenditure).

Elasticity of health-care seeking behavior

With reference to self-reported illness = $\% \Delta \text{ HSB} / \% \Delta \text{ SRI}$

Where SRI is self-reported illness

The values below will be used to compute the elasticities.

Health insurance, health-care seekers and median total annual expenditure for 2002 and 2007.

	2002[1]	**2007[2]**
Health insurance coverage	16 (2.9%)	45 (29%)
Health-care seekers	163 (68.2%)	59 (77.6)
Self-reported illness	239 (43.5%)	76 (48.7%)
Median Total Annual Expenditure (Range)	JA $170,019.8 (JA $1,954,053)	JA $396,576.9 (JA $5,213,338)

[1]JA $50.47 + US $1.00.
[2]JA $80.97 = US $1.00.

Measure

Self-rated illness or self-rated dysfunction (i.e., self-rated health condition): Is derived from a question which sought to ascertain whether an individual has experienced an illness. The individual was presented with a number of illnesses, and she or he is expected to state either yes or no to each one. A binary variable was then created in which 1=yes to any dysfunction and 0=no.

Self-rated health status: This variable is self-rated assessment of general health status. For this variable the options are very good; good; fair; poor and very poor.

Health-care seeking behavior: This relates to whether an individual sought medical care from a medical practitioner, healer, nurse, pharmacist, midwife or any other health practitioner.

National Health Fund (NHF): This is health coverage provided by the Jamaican Government to reduce the burden on the health care sector. It provides prescription on health benefits to all residents. This was established under the National Health Fund Act, which was established in 2003. The NHF subsidy drugs for residents who are affected by one or more of 15 health conditions. These are 1) arthritis; 2) asthma; 3) benign prostate hyperplasia (BPH); 4) breast cancer; 5) diabetes mellitus; 6) epilepsy; 7) glaucoma; 8) high cholesterol; 9) hypertension; 10) ischemic heart disease; 11) major depression; 12) prostate cancer; 13) psychosis; 14) rheumatic heart disease, and 15) vascular disease.

Jamaica Drug for the Elderly Programme (JADEP): The JADEP was established by the Ministry of Health in July 2004 to provide drugs for elderly Jamaicans (ages 60+ years), and this was later handed over to the NHF as an individual benefit. It enables elderly people to access drugs through subsidized payment by the government if the individual is suffering from any combination of eleven dysfunctions. These are 1) arthritis; 2) asthma; 3) benign prostate hyperplasia; 4) enlarged prostate; 5) cardiac or heart disease; 6) diabetes mellitus; 7) high cholesterol; 8) hypertension (or high blood pressure); 9) psychiatric conditions; 10) vascular conditions (or circulatory problems), and 11) glaucoma.

RESULTS

A sample of 566 elderly people 80+ years was extracted for 2002 (39.9% men and 60.1% women) with a mean age of 85.4 years (4.6 years), while the sample for 2007 contained 159 elderly people 80+ years (37.1% men and 62.9% women) with a mean age of 85.0 years (4.5 years) (Table **1**). Forty-four percent of the 2002 sample reported suffering from an illness and this increased to 48.7% in 2007. In 2002, 42.2% of the sample sought medical care compared to 47.8% in 2007. Of those who responded, 68.2% replied yes in 2002 and 77.2% answered yes in 2007. Based on Table **1**, there is a shift to relocate to urban areas: 30.2% resided in urban areas in 2007 compared to 10.1% in 2002; 18.7% in semi-urban areas in 2002 and 20.8% in 2007. There is evidence of changes in health conditions of the population over the two studied periods. In 2007 over 2002, in the acute illness category, there were reductions in the number of cases of illnesses due to cold and asthma to an even greater increase in cases of asthma. Whereas in the chronic conditions, hypertension was the most prevalent diagnosed disease in 2007 (46.8%) and this represented a 1% decline over 2002. Diabetes mellitus had the greatest increase by 550% over the studied period compared to +9% in unspecified diseases, and -76.6% in arthritic cases (Table **1**). Continuing, the numbers of 80+ years widowed Jamaicans increased by 3.8% and the percentage of married sample increased to 25.8% (from 23.3% in 2002). Three percent of elderly people 80+ had health insurance coverage in 2002 and this increased to an exponential 900% over 2002 (for 2007). The increase in health insurance coverage can be substantially accounted for by public coverage (+782.8%).

Based on Table **2**, there is no statistical relationship between diagnosed health conditions and area of residents and that this was the case in both years. Despite this reality, the reduction in hypertensive cases can be accounted for by the decline in the number of cases in semi-urban residents, and the increase in urban cases. The greatest reduction in

Table 1.   Sociodemographic characteristic of sample.

Variable	2002	2007
	N= 566	**N=159**
Sex		
Male	39.9	37.1
Female	60.1	62.9
Health-Care Seeking Behavior		
Yes	68.2	77.6
No	31.8	22.4
Health Insurance Coverage		
Yes	2.9	29.0
No	97.1	71.0
Area of Residence		
Rural	71.2	49.1
Semi-urban	18.7	20.8
Urban	10.1	30.2
Self-Reported Illness		
Yes	43.5	48.7
No	56.5	51.3
Diagnosed Health Conditions		
Acute:		
Cold	2.8	1.3
Diarrhoea	2.8	3.9
Asthma	-	1.3
Chronic:		
Diabetes mellitus (diabetes)	2.8	18.2
Hypertension	47.8	46.8
Arthritis	27.8	6.5
Other	16.7	18.2
Not diagnosed	-	3.9
Income Quintile		
Poorest 20%	24	18.9
Poor	20.1	18.9
Middle	18.7	29.6
Wealthy	18.2	17.0
Wealthiest 20%	18.9	15.7
Age Mean (SD)	85.4 yrs (4.6 yrs)	85.0 yrs (4.5 yrs)
Length of Illness Median (Range)	10 days (90 days)	7days (998)
Number of Visits to Health Practitioner(s) Median (Range)	1.0 (7)	1.0 (4)
Health Status		
Very good	NI	6.4
Good	NI	18.5
Moderate	NI	40.1
Poor	NI	26.8
Very poor	NI	8.3
Marital Status		
Married	23.3	25.8
Never married	22.8	19.4
Divorced	0.7	2.6
Separated	1.8	2.6
Widowed	47.9	49.7

Table 2.   Diagnosed health conditions by area of residence.

Variable	2002[1]			2007[2]		
Diagnosed Health Conditions	Rural	Semi-Urban	Urban	Rural	Semi-Urban	Urban
Cold	3.2	0.0	0.0	0.0	6.3	0.0
Diarrhoea	0.0	33.3	0.0	5.3	0.0	4.8
Asthma	-	-	-	0.0	0.0	2.4
Diabetes	3.2	0.0	0.0	21.1	25.0	14.3
Hypertension	48.8	66.7	0.0	47.4	25.0	54.8
Arthritis	29.0	0.0	50.0	5.3	6.3	7.1
Other	16.1	0.0	50.0	15.8	37.5	11.9
No	-	-	-	5.3	0.0	4.8

[1]χ^2 (df = 10) = 15.561, $P > 0.05$.
[2]χ^2 (df = 14) = 13.607, $P > 0.05$.

arthritic cases were in urban residents followed by rural dwellers and an increase was observed in semi-urban residents. With regard to diabetic cases, increases were observed in all three (3) geographic regions with the greatest in semi-urban areas.

On examining health status and area of residents, no statistical association emerged between the two variables (χ^2 (df = 8) = 11.899, $P > 0.05$). Furthermore, no comparison is possible as there were no data for 2002 as data on health status was collected for the first time in 2007 (Table **3**).

relationship was a weak one (contingency coefficient = 0.278). Furthermore, 46.1% of those who indicated an illness, reported poor health status, whereas only 2.6% of them indicated very good health status, 11.8% reported a good health status and 39.5% reported a moderate health status. On the other hand, 25.1% indicated that they had no illness reported poor-to-very-poor health status compared to 10.0% who had very good health status and 25.0% had good health status.

Table **5** showed that there were no differences in the health status of males and females (χ^2 (df = 4) = 3.867, $P > 0.05$).

Table 3.   Health status by area of residence.

Variable	2002[1]			2007[2]		
Health Status	Rural	Semi-Urban	Urban	Rural	Semi-Urban	Urban
Very good	NI	NI	NI	6.4	6.1	6.5
Good	NI	NI	NI	31.9	18.2	10.4
Moderate	NI	NI	NI	38.3	33.3	44.2
Poor	NI	NI	NI	21.3	30.3	28.6
Very poor	NI	NI	NI	2.1	12.1	10.4

[1]NI.
[2]χ^2 (df = 8) = 11.899, $P > 0.05$.
NI denotes no information available.

Table **4** showed that a statistical correlation existed between health status and self-reported illness; but the

Table 4.   Health status by self-reported illness, 2007.

Health Status	Self-Reported Illness	
	Yes	No
Very good	2.6	10.0
Good	11.8	25.0
Moderate	39.5	40.0
Poor	32.9	21.3
Very poor	13.2	3.8

[2]χ^2 (df = 4) = 13.036, $P = 0.011$, cc=0.278.

Table 5.   Health status by sex.

Health Status	Sex[1]	
	Male	Female
Very good	5.1	7.1
Good	16.9	19.4
Moderate	35.6	42.9
Poor	35.6	21.4
Very poor	6.8	9.2

[1]χ^2 (df = 4) = 3.867, $P > 0.05$.

A statistical relationship exists between health status and income quintile (χ^2 (df = 16) = 26.716, $P < 0.045$); but that

Table 6.   Health status by income quintile.

Health Status	Income Quintile[1]				
	Poorest 20%	Poor	Middle	Wealthy	Wealthiest 20%
Very good	10.0	6.7	0.0	3.7	17.4
Good	13.3	10.0	23.4	7.4	39.1
Moderate	36.7	46.7	40.4	48.1	26.1
Poor	36.7	23.3	27.7	25.9	17.4
Very poor	3.3	13.3	8.5	14.8	0.0

[1]χ^2 (df = 16) = 26.716, $P < 0.045$, cc=0.381.

the association was insubstantial, cc=0.381. Further examination revealed that 20% wealthiest population had the greatest very good and good health status compared to the other social classes (Table **6**).

Table **6** presented that 10.0% of respondents below the poverty line indicated having a very good health status which was greater than for those in the other income quintile with the exception for those in the wealthiest echelon. Only 17.4% of the wealthiest out of 20% reported a poor health status compared to 20% and 23% of the poorest out of 36.7% 20%; 23.3% of the poor; 27.7% of the middle class and 25.9% of the wealthy. The greatest very poor health status was recorded by wealthy respondents (14.8%) followed by the poor (13.3%); middle class (8.8%) and the poorest 20% (3.3%).

No statistical association was found between health status and health care-seekers (χ^2 (df = 4) = 3.350, $P > 0.05$) (Table **7**).

Table 7.   Health status by health-care seeking behavior.

Health Status	Health-Care Seeking Behavior[1]	
	Yes	No
Very good	1.7	5.9
Good	11.9	11.8
Moderate	35.6	52.9
Poor	35.6	23.5
Very poor	15.3	5.9

[1]χ^2 (df = 4) = 3.350, $P > 0.05$.

Based on Table **8**, a statistical correlation existed between health status and health insurance coverage (χ^2 (df = 4) = 21.913 $P = 0.039$); but that relationship was a moderate - weak one, contingency coefficient = 0.352. On examination, it was revealed that the those with the private health insurance were most likely to have good health status; those with National Health Fund (NHF) were most likely to report moderate health, and those with other public coverage also likely to have moderate health status and the same were those without health insurance coverage.

Whether respondents have a chronic non-communicable or infectious disease, their health-care seeking behavior was statistically the same in both periods - 2002 (χ^2 (df = 5)

Table 8.   Health status by health insurance coverage.

Health Status	Health Insurance Coverage[1]			
	Private	Public, NHF	Public, Other	No
Very good	0.0	12.0	0.0	5.5
Good	60.0	28.0	0.0	17.3
Moderate	20.0	48.0	53.3	38.2
Poor	20.0	8.0	46.7	28.2
Very poor	0.0	4.0	0.0	10.9

[1]χ^2 (df = 4) = 21.913 $P = 0.039$, cc=0.352.
Note: NHF – National Health Fund.

= 5.381, $P > 0.05$) and 2007 (χ^2 (df = 7) = 6.209, $P > 0.05$). However, in 2007, the percentage of the sample with hypertension was seeking less medical care and this is also the case for the arthritic patients, and those with cold. However, increases were recorded for diabetes mellitus, diarrhea and unspecified dysfunction cases (Table **9**).

Significant statistical difference was found between those with particular health status and the amount of money they was spent (F statistic [5,152] = 7.134, $P < 0.001$) (Table **10**). Those with the greatest expenditure had the highest health status (i.e., very good) followed by those with good. However, those with moderate health status had least expenditure as compared with those who recorded very poor health status and spent more than those with a poor health status.

Table **11** The year 2002 revealed respondents of total expenditure which did not differ because of the existence (or not) of self-rated illnesses (F statistic [5, 30] = 0.396, $P > 0.05$). However, for 2007, people with particular ill-health had different total expenditure as well as those without any illness (F statistic [7, 69] = 2.935, $P = 0.009$) (Table **11**). Based on Table **11** showed patients who were diagnosed with either acute or chronic health conditions; diarrhea patients who spent the most (JA \$597,953.39) followed by diabetic patients (JA \$568,441.75) and the least was spent by asthma patient (JA \$42,703.27).

No significant statistical difference existed between expenditure on particular health care facilities and self-reported health conditions: for 2002 (F statistic [7, 53] = 0.288, $P = 0.955$) and 2007 (F statistic [7, 46] = 0.119, $P = 0.997$) (Table **12**).

Table 9.   **Diagnosed health conditions by health-care seeking behavior.**

Variable	2002[1]		2007[2]	
	Health-Care Seeking Behavior		**Health-Care Seeking Behavior**	
Diagnosed Health Conditions	**Yes**	**No**	**Yes**	**No**
Cold	6.0	12.5	1.7	0.0
Diarrhoea	3.6	0.0	5.1	0.0
Asthma	-	-	1.7	0.0
Diabetes	3.6	0.0	18.6	17.6
Hypertension	46.4	50.0	42.4	64.7
Arthritis	32.1	12.5	5.1	11.8
Other	14.3	25.0	20.3	5.9
No	-	-	5.1	0.0

[1]χ^2 (df = 5) = 5.381, $P > 0.05$.
[2]χ^2 (df = 7) = 6.209, $P > 0.05$.

Table 10.   **Health status by total expenditure, 2007.**

Health Status	Descriptive Statistics			95% Confidence Interval
	Mean	**Std. Deviation**	**Std. Error**	
Very good	1,447,018.91	1,595,683.12	504,599.31	305,535.97, 2,588,501.85
Good	651,694.11	561,405.68	104,250.42	438,146.81, 865,241.41
Moderate	442,482.79	400,604.78	50,471.46	341,591.79, 543,373.80
Poor	473,225.25	428,012.88	66,043.82	339,847.05, 606,603.46
Very poor	502,309.96	214,315.07	59,440.31	372,800.66, 631,819.26
Total	**558,288.05**	**615,473.17**	**49,120.11**	**461,261.72, 655,314.38**

F statistic [5,152] = 7.134, $P < 0.001$.

A cross-tabulation between area of residents and sex of respondents revealed no significant statistical correlation for 2002 (χ^2 (df = 2) = 0.612, $P > 0.05$) or 2007 (χ^2 (df = 2) = 3.958, $P > 0.05$). The findings revealed that in 2002, 10.6% of women dwell in urban areas compared to 9.3% of men, and in 2007 the figures increased by 230.2% and 136.6% women and men, respectively. For 2002, 73.0% of women resided in rural areas compared to 73.0% of men, and the percentages fell to 50.8 and 48.0 for men and women, respectively. However, in 2007, the percentage of men who dwell in semi-urban areas increased by 53.1%, while the number of women declined by 12.4%. This indicates urbanization of 80+ year population in Jamaica.

Based on Fig. (**3**), the greatest percentage increase in ownership of health insurance coverage was in the poor cohort (3600%) compared to the poorest 20% (2575%); middle class (855%); wealthy (640%) and the wealthiest 20% (458%).

Elasticity of Health–Care Seeking Behavior

Health-care seeking behavior with respect to health insurance indicates that health-care seeking behavior of Jamaicans is highly irresponsive to changes in health insurance coverage. With all other things being equal, a 1%

change in health insurance will cause a less than 1% change in health-care seeking behavior of 80+ years Jamaicans.

Health-care seeking behavior with respect to total annual expenditure (median) = 0.382. The value denotes that health-care seeking behavior is less responsive to changes in income. With all other things being equal, a 1% change in health insurance will cause a less than 1% change in health-care seeking behavior of 80+ years Jamaicans. Elasticity of health-care seeking behavior with reference to self-reported illness = 0.94. This finding emphasizes the reluctance of sample to seek medical care even when illnesses are on the rise. Over the period, the percentage change in self-reported illness was 68.2% which results in a 63.8% change in health-care seeking behavior with all other things being held constant. Health-care seeking behavior, therefore, is an inflexible commodity as more health insurance coverage or total annual expenditure will reflect an incremental change in health-care seeking behavior.

DISCUSSION

Data from PIOJ and STATIN, for 2 decades (1989-2007), showed that elderly people (ages 60+ or 65+ years) sought more health care services and reported greater number of cases in chronic illnesses than all other age

Table 11. Self-reported health conditions by total expenditure, 2002 and 2007.

Self-Reported Health Conditions	2002[1]			95% Confidence Interval for Mean	
	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
Cold	101,186.97	.	.	.	.
Diarrhoea	301,830.15	.	.	.	.
Diabetes mellitus	227,604.63	.	.	.	.
Hypertension	191,674.92	114,769.48	27,835.69	132,665.90	250,683.94
Arthritis	180,414.82	153,268.67	48,467.81	70,773.02	290,056.62
Unspecified	148,949.44	98,636.87	40,268.33	45,436.40	252,462.48
Total	**182,970.56**	**119,752.91**	**19,958.82**	**142,452.01**	**223,489.11**
	2007[2]				
Cold	236,103.72	.	.	.	.
Diarrhoea	597,953.39	98,902.35	57,101.30	352,266.33	843,640.45
Asthma	42,703.27	.	.	.	.
Diabetes mellitus	568,441.75	417,728.90	111,642.74	327,252.26	809,631.23
Hypertension	310,082.28	233,719.82	38,953.30	231,002.88	389,161.69
Arthritis	188,747.40	123,903.88	55,411.50	34,900.41	342,594.40
Unspecified	496,102.96	343,771.70	91,876.86	297,615.09	694,590.83
No	1,103,454.01	1,320,420.17	762,344.94	2,176,651.5	4,383,559.56
Total	**420,692.91**	**398,170.68**	**45,375.76**	**330,319.25**	**511,066.57**

[1]Figures are quoted in Jamaican dollars (US $1.00 = JA. $50.97, in 2002).
[1]F statistic [5, 30] = 0.396, $P > 0.05$.
[2]Figures are quoted in Jamaican dollars (US $1.00 = JA. $80.47, in 2007).
[2]F statistic [7, 69] = 2.935, $P = 0.009$.

cohorts [25]. Even though this provides us with an understanding of the differences between elderly people and other age groups, it does not provide an insight into 80+ age cohort as the ages 60+ or 65+ are dominated by young-old (60-74 years). Eleven percent (10.9%) of Jamaica's population was 60+ years in 2007 [22]; and of this 65% was 60-74 years approximately 2% was 80+ years suggesting that an examination of elderly people's (ages 60+) health status, functional capacity and other matters are substantially on the young-old and not the 80+ age cohort. This study provides a comprehensive examination of the 80+ year cohort. Urbanization is not occurring in the 80+ year group as 71 out of every 100 of them resided in rural areas in 2002 and this fell by 30.8% to 49 out of every 100 in 2007. For the same period, 5.5% more elderly people resided in urban areas and 6.2% in semi-urban area with a corresponding decline of 11.7% from rural zones [22].

The population 80+ years noted an increase in the percentage reporting illness: in 2007, 49% and 44% in 2002. Increased illness is distributed across the acute as well as the chronic health conditions. On acute health conditions, the percentage of the sample that reported diarrhea in 2007 compared to 2002 was increased by 39.3% and asthma increased from none to 1.3%. Chronic health conditions reported remarkable differences from acute health conditions over the same period. Hypertension continues as the leading cause of chronic dysfunction affecting 80+ age group – 47% of respondents reported an illness; but this declined by 1 in

every 100 in 2007 over 2002. Diabetes mellitus increased by an exponential 550% in 2007 over 2002, which means that 18 percent of the sample indicated an illness or had this health condition making it the second leading cause of morbidity, which was shared with unspecified health conditions. In 2002, arthritis was the second leading cause of morbidity (28 out of every 100 ill patients 80+ years) to the fourth leading health condition affecting this sample.

In 2002, 78 out of every 100 ill-patients 80+ years had diabetes mellitus, hypertension or arthritis which decreased to 72 in every 100 in 2007. Although the aggregate epidemiological profile declined, the massive increase in diabetic cases must be due to public health concern. Another interesting finding is the 55% increase in hypertensive cases in urban areas in spite of the aggregate decline in such cases. The increased chronic health condition which is occurring in the 80+ year cohort means greater public health care expenditure. The World Health Organization (WHO) reported that "The health implications of healthy ageing – the physical and mental characteristics of old age and their associated problems – need to be better understood" [31], which implies the demands, preparations, and social and economic perspectives of ageing as well as the policy base researches to better plan for the reality of an ageing population in particular the 80+ age cohort. This study concurs with the literature that the health problems of ageing are extensive; but it goes further to show the remarkable differences between 60+ and 80+ age cohorts and their

Table 12. Self-reported health conditions by medical care expenditure (public and private health care expenditure), 2002.

	Self-Reported Health Conditions	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
		Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Cost at Public Health Facility[1]	Cold	0.00	.	.	.	.
	Diarrhoea	0.00	0.00	0.00	0.00	0.00
	Asthma	0.00	.	.	.	.
	Diabetes mellitus	120.00	145.68	46.07	15.79	224.21
	Hypertension	997.50	3124.79	698.72	-464.95	2459.95
	Arthritis	416.67	520.42	300.46	-876.12	1709.45
	Unspecified	240.91	406.71	122.63	-32.32	514.14
	No	33.33	57.73	33.33	-110.09	176.75
	Total	**493.14**	**1983.53**	**277.75**	**-64.74**	**1051.01**
Cost at Private Health Facility[2]	Cold	1600.00	.	.	.	.
	Diarrhoea	4300.00	3404.41	1965.54	-4157.03	12757.02
	Asthma	0.00	.	.	.	.
	Diabetes mellitus	2855.55	7762.10	2587.37	-3110.93	8822.0378
	Hypertension	2147.83	6564.29	1368.75	-690.78	4986.44
	Arthritis	833.33	763.763	440.96	-1063.96	2730.62
	Unspecified	2316.67	3151.291	909.70	314.43	4318.90
	No	1650.00	919.24	650.00	-6609.03	9909.03
	Total	**2281.48**	**5482.01**	**746.01**	**785.18**	**3777.78**

[1]F statistic [7, 53] = 0.288, *P* = 0.955.
[2]F statistic [7, 46] = 0.119, *P* = 0.997.

health conditions. In 2007, 33% and 36.5% of elderly people 60+ and 65+ years had hypertension respectively, 19.1% and 21.0% of 60-64 years and 65+ years had diabetes mellitus respectively, with 18.6% and 16.9% of 60-64 years and 65+ years reported arthritis.

In 2007, 15.5% of the Jamaicans reported an illness and 66% of them sought medical care [25], suggesting that 34 out of every 100 Jamaican who indicated health conditions did not seek health care or used home remedies. Statistics revealed that 30.2% of those who indicated an illness used home remedy [25], suggesting that there were ill Jamaicans who were unattended by health care practitioners. For the elderly population the statistics are somewhat different as 43.8% of those 65+ and 36.6% of 60-64 year cohorts reported a health condition, with 75.1% of the 60+ population sought medical care which is 2.1% less than the number of 80+ years who visited health care practitioners in the same 4-week time period.

Thirty-five out of 100 of the 80+ year population reported poor health status. In fact, those who reported diarrhea and diabetes mellitus found to spent more than those with other diagnosed health conditions (but that this was not used for medical expenditure). Those 80+ year old with very poor health status had a greater total annual expenditure than the poor, with those in very good health spending the most for a year. Further examination of health status and social class (i.e., income quintile) showed that the wealthiest 20% had the greatest health status followed by

poorest 20%. Marmot [32] believed that income is positively associated with health status which is partially true for elderly people 80+ years. The wealthiest 20% recorded the greatest health status; but the wealthy and middle class recorded lower health status than the poorest 20%. Conversely, the wealthy 80+ year old Jamaicans recorded the greatest very poor health status followed by the poor, middle class, poorest 20% and latest by the wealthiest 20%. Embedded in this finding is the similarity between poorest 20% and the wealthiest 20%.

Studies have revealed the significant statistical association between health status and gender, with some declaring that women have greater health while others have shown that men have the greater health status. Rudkin [33] found that women have lower levels of physical wealth (i.e. economic) than men. This finding is further confirmed by Haveman *et al*. [34] whose study revealed that retired men's well-being were higher than that of their female counterparts, because men usually acquire more material resources, and more retired benefits compared to women ages 65 years and older. Thus with men receiving more than women, and having a more durable possession than women, their material well-being is higher in later life. Courtenay [35] noted from research conducted by the Department of Health and Human Services [36] and Centers for Disease Control and Prevention [37] that from the 15 leading causes of death except Alzheimer's disease, the death rates are higher for men and boys in all age cohorts compared to women and girls. Embedded within this theorizing are the differences in
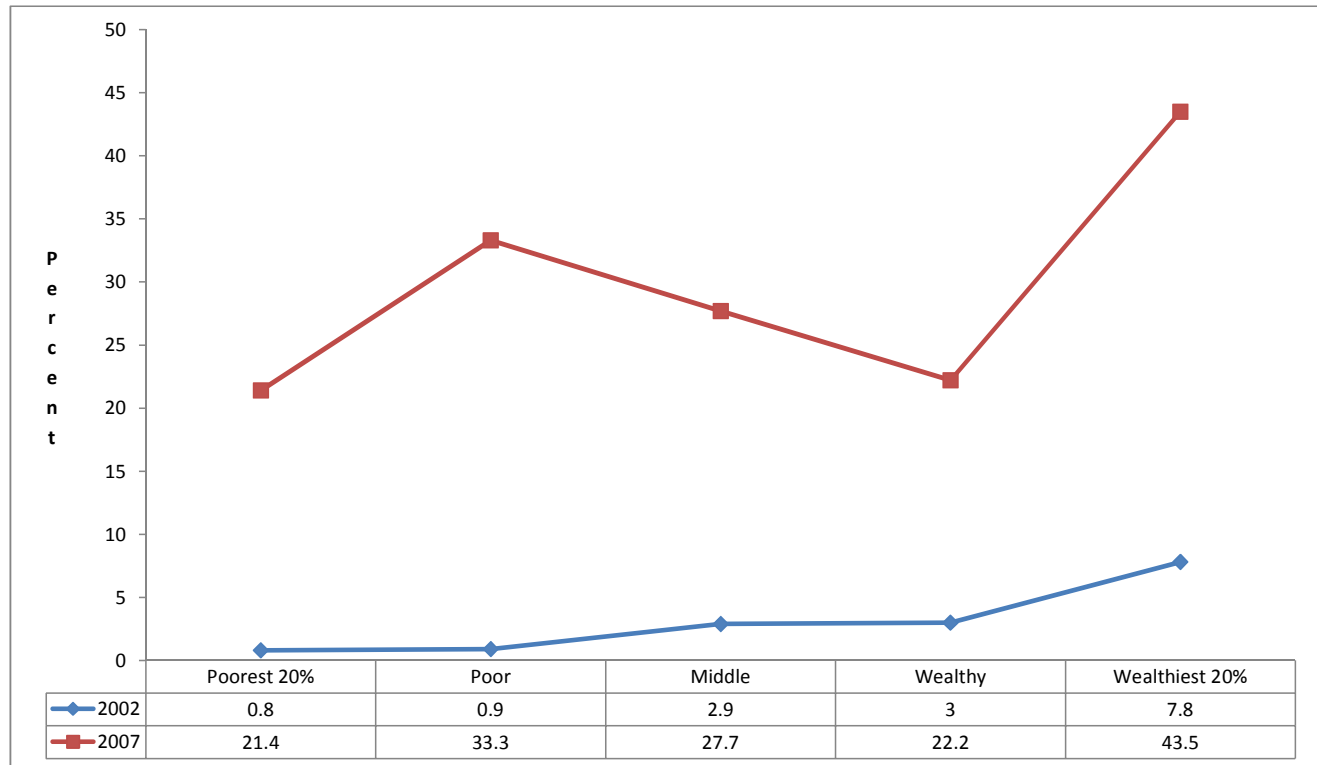
	Poorest 20%	Poor	Middle	Wealthy	Wealthiest 20%
2002	0.8	0.9	2.9	3	7.8
2007	21.4	33.3	27.7	22.2	43.5

Fig. (3). Percentage of population 80+ years with health insurance coverage, 2002 and 2007.

fatal diseases that are explained by gender constitution [38], to which Courtenay [35] explained that due to behavioral practices of the sexes, which may explain the fact that men are dying 6 years earlier than females [39]. However, this study does not concur with literature in any way as no statistical correlation was found between health status and sex of the 80+ year cohort.

Neither there was statistical association found between the two aforementioned variables, nor there was a difference between the health status of those who sought medical care and those who did not. This indicates the reluctance of 80+ age cohort to seek medical care owing to very poor or poor health status, with conditions such as diabetes mellitus, hypertension or even cold. This contradicts the literatures that state the positive correlation between health conditions and health- care seeking behavior [40]. Bogue [40] opined that as the elderly people (ages 60+ years) ages from young-old (ages 60-74 years) to oldest-old (85+ years), she/he will demand more medical care and their health conditions will be increased, which is not the case for 80+ age cohort in this study.

Using a sample of 1,006 Jamaicans who indicated having sought medical care in a 4-week period in 2007, Bourne [41] found that there was no significant statistical association between medical care and health insurance coverage. The current study contradicts Bourne's work that 12% of the variability in health-care seeking behavior can be explained by health insurance coverage and other studies [42]. In 2002, health insurance coverage was completelyprivate which observed 3 out of every 100 elderly people 80+ year elderly people

having coverage, and post-2003 when health took on a public aspect, this increased to 29 out of every 100 in 2007. This explains the increase in health-care seeking behavior, which was recorded in 2007 over 2002: 68.2% in 2002 and 77.6% in 2007. In 2007, 21 out of every 100 poorest 20% had health insurance compared to 1 in every 100 in 2002 this substantial increase was also recorded for the poor with 33 out of every 100 having health insurance compared to 1 in every 100 in 2002. Hence, the increase in health care seekers is owing to the poor and poorest who were unable to afford health care services in 2002 because of financial constraints.

In 2007, 43 out of every 100 elderly people ages 60-64 years indicated that they were unable to afford to seek medical care compared to 27 out of 100 elderly people 65+ years. Concurrently, 22% of the elderly people 60-64 years indicated that they used home remedy compared to 24% of elderly people 65+ years. Through the JADEP and National Health Insurance programmes the heavy expenditure on medical care has been substantially reduced, yet only 21% of the poorest 20% had access to this or private insurance; 33% of the poor; 28% of the middle class; 22% of the wealthy and 44% of those in top wealthiest quintile. Embedded in this information is more than cost constraint, it is a self-perception that these are not enough medically-unwell to require care, cultural biases and their perspectives on living longer. Hence, this accounts for the irresponsiveness of this age cohort to seek medical care within the context of increased health insurance coverage and expenditure. This is not atypical as Borghesi and Vercelli [43] observed that elderly people have a progressively lower elasticity of aspirations to outcome, suggesting their unwillingness to

carry out some functions and attain particular events is low, and fosters an explanation for the low responsiveness of the 80+ age cohort for health-care seeking behavior in spite of more accessibility to health care choices.

The issue, which must be raised and addressed in this study, is the validity of using self-rated health to measure health status. The scientific literature has shown that self-rated health status is highly reliable to proxy for health and that this has successfully crossed cultural lines [44]. Another study conducted by O'Donnell and Tait [45] concluded that self-reported health status can be used to indicate wellbeing as all respondents who had chronic diseases reported very poor health. It is for this rationale that some studies have used self-rated illnesses and health status instead of life expectancy or other objective to measure health [46-48] as the latter is narrower and does not encapsulate the breadth of the subjective measures.

There are other issues of importance in this study such as social support and comorbidity. Bourne *et al*. [14] found that the crude death rate for the Jamaican population was 17.8 per 100 compared to 33 per 100 of those 55+ years, 30.5 per 100 for those 70-74 years and 78 per 100 of those 75+ years, which indicated that greater incident of dying in the older elderly cohort 80+ years because of the increased risk factors and comorbidity. This is in keeping with Bourne *et al*. work, which displayed that chronic non-communicable increases with ageing among those 60+ years old, from young old (60-74 years) to oldest old (85+ years) [14]. Like Bourne *et al*. research that showed an increase in illness during the ageing cohorts [14], this work concurs with the increase of diseases in the 80+ elderly cohorts. With the rise in comorbidity in the ageing process, it follows that elderly people (80+ years) require more assistance in the later years of their lives. The issue is, ageing, especially for those 80+ years old, which lead to multimorbidities that reduce physical and cognitive functionalities of these people. Social support (or network) is therefore critical to elderly care, particularly for those with multimorbidity. It was established by Mazzella *et al*. [49] that there is relationship between social support and mortality among elderly people with multimorbidity. In this study, we found that morbidity as well as poor self-rated health status increased among those 80+ years old, and Mazzella *et al*. work provide some explanation for this work as well as reason for greater probability of dying at older ages (75+ years) as emerged in Bourne *et al*. work [14], which is also true for those 80+ years old.

There are some realities of those in the 80+ year cohort, which are increased physical inactivity, deaths of their spouses and associates along with continued poor lifestyle which accounts for increase probability of dying. It follows that loneliness, infrequent contact with other people, bereavement and inability to be self-sufficient because of lower functionality, increases the need for social support among the elderly cohort, especially those 80+ years that have lived beyond the life expectancy in Jamaica. It should not be surprising; therefore, that mortality would increase among the elderly when there is low social support [49], within the context of increased comorbidity, death of spouses and associates, reduced functionality and the increased inability to financially independent. Mazzella *et al*. work offers an explanation for the increased mortality

among this cohort, particularly because the current findings showing that comorbidity increases with this age cohort and the quality of health decreases among poor 80+ years old. It is not the comorbidity that explains the greater long-term mortality among elderly according to Mazzella *et al*.; but it is the elderly people with the highest comorbidity. Hence, we can extrapolate here from that those elderly people (80+ years) with multimorbidities have low social support, which means that there is a greater probability for them to die and this supports the need for immediate public health intervention among this cohort in Jamaica including increased social support, especially for those with multimorbidities. Mazzella *et al*. [49] explained the situation of elderly Jamaicans 80+ years old. In Jamaica, among elderly people 80+ years old, the percentage of them receiving social support decreased from 55.1% in 2002 to 23.0% in 2007 and this corresponds to an increase in the percentage of deaths among those 75+ years for the same period [14] as well as an increase in self-reported illness among the 80+ years cohort. The reduction in social support corresponds to a rise in illness, which explains the simultaneous rise in illness and mortality, as showed in this study. The rise in deaths among Jamaican elderly 80+ years cohort can be explained by Mazella *et al*. theory that those with the highest prevalence of multimorbidities and low social support would have a faster rate of mortality. According to Mazzella *et al*. [49] low social support for elderly people is predictive of long-term mortality and in which is the current scenario Jamaica as evident from the present study. Clearly the challenges faced by elderly people 80+ years old and living beyond this age in Jamaica is a product of social networks they are afford, and the social network offers a cushion against dying now and dying later, especially if the 80+ years old has multimorbidities. Poverty and residing in rural zones for the 80+ years old are among issues that further complicate the survivability, even more so when the individual has multimorbidities which may have arisen because of the side effects of medications being taken for long periods, the resistance of the body to these prescribed drugs and depression caused by the myriad of complexities arise owing to living beyond 80+ years.

CONCLUSION

Medical practitioners, social workers, health education and promotion specialist, and public health practitioners as well as policy makers are now provided with an extensive review of the health conditions, shifts in patterns of illness, health-care seeking behavior and practices of elderly people 80+ years in Jamaica. In excess of 77% of those who reported ill-health sought medical care, which indicates that there are few 80+ years old that are likely to use home remedy. Close to one-half of those who reported a health condition suffered from hypertension, and despite only 18 out of every 100 become ill 80+ age elderly people had diabetes mellitus, the number of cases of people suffering from this illness increased by 550% in 2007 over 2002. This increased number of reported cases in diabetes mellitus is an alarming event and must be addressed with urgency by public health specialists.

With the urbanization of the 80+ age cohort to urban and semi-urban areas in Jamaica, health practitioners and other specialists must be equally cognizant of this population

ageing migration phenomenon in order to effectively address the needs of the cohort within their new place of abode. The urbanization of this cohort in Jamaica is no different for the sexes; but that approximately 50% of elderly people still reside in rural areas (with 50.8% men and 48% women).

Another key finding of the current study is the preponderance of women than men in the 80+ age cohort. The sex ratio for this cohort was 59 men to every 100 women, indicating a greater mortality of men at older ages than women. Concomitantly, the expansion of public health insurance for elderly people Jamaica has resulted in an exponential increase in the number of 80+ aged Jamaican accessing the service; but most of the cohort is yet to subscribe for this free programme. Again, this emphasizes the need for a public health campaign of the National Health Fund for senior citizens and its purpose of aiding in the reduction of expenditure for medical care for elderly Jamaicans.

In Jamaica, the elderly people ranging from poorest 20% to the wealthiest 20% has the same access to health insurance coverage as this is free for all persons 60+ years. In spite of this reality, the wealthiest 20% recorded the greatest health insurance coverage (44%) compared to 21% of the poorest 20%; 33% of the poor; 28% of the middle class, and 22% of the wealthy class. The issue here is not access or inability to access care, which is the case in other Latin Americans and other Caribbean states [42]; but the willingness to access such facilities owing to acculturation. The loftiness in the culture explains the rationale for the greater percentage of Jamaicans using private health care facilities (in 2007, 52% of Jamaicans used private health care facilities compared 41% public utilization despite the latter being free). Elderly people are more set in their ways, and so the willingness to request and seek assistance from a stranger in particular an outsider will be difficult thereby explaining the reluctance of the poorest 20% in subscribing for the free health insurance coverage compared to the wealthiest 20%.

Health care seekers are not likely to respond greater than the change in particular individual attributes because health-care seeking behavior is an unadoptable commodity. Embedded in this finding is population's unresponsiveness with changes in health insurance coverage or more total expenditure. It is this fact that explains why health insurance coverage increased by over 180% and the resulting 64% change in health-care seeking behavior, with all other things being held constant. Likewise, a 167% change in total annual expenditure results in a 64% change in health-care seeking behavior with all other things being held constant.

In summary, wealth continues to explain greater health status for the wealthiest 20% of 80+ age cohort in Jamaica. One of the ironies in this study is the fact that the poorest 20% recorded the second highest health status, indicating that this social class enjoys a greater health status than the wealthy, middle and poor cohorts. In fact, wealth makes a difference for the wealthiest and not the wealthy or middle class that are 80+ years old. This contradicts the general perspective that poverty is the cause of ill-health [42] as wealthy and middle classes recorded greater poor health status that the poorest 20% of 80+ age cohort. Simply put, the poorest 20% reported less health conditions than the two aforementioned age cohorts as access to more financial resources does not mean this will be expended on medical care. The current study highlights a critical issue that health-care seeking behavior of elderly people 80+ is an inelastic product, suggesting that it is less responsive to self-reported illness, health insurance and the amount of money that the individual is able to spend because at this age people are less aspiring to maintain more from life.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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