

Good Health Status of Older and Oldest Elderly in Jamaica: Are there Differences between Rural and Urban Areas?

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Abstract: The aim of the current study was to examine the good health status of older and oldest elderly Jamaicans as well as to determine predictors of this health status. A sub-sample of 1,069 respondents (42.4 percent men and 57.6 percent women) who indicated being 75 years and older were used for this study. This is extracted from a larger nationally cross-sectional survey of 25,018 respondents in 2002. The stratified multistage probability sampling technique was used to draw the survey respondents, which reflects the socio-demographic characteristic of the Jamaican population, and makes the sample generalizable on the population. A self-administered questionnaire was used to collect the data from the sample; and the interviewers were trained to collect data. The data were entered, stored and retrieved in SPSS 16.0. Descriptive statistics were used to examine the demographic characteristics of the sample; chi-square was used to investigate non-metric variables, and logistic regression was the multivariate technique chosen to determine predictors of good health status. Two factors were found to be statistically significant predictors of good health status of older and oldest elderly respondents. These were area of residence and sex of respondents. Older and oldest elderly men reported a greater good health status than old and oldest elderly women (OR = 1.410; 95% CI: 1.048-1.897). On the other hand, there was no statistical difference between the self-reported diagnosed (chronic) recurring illness and age cohort of the sample. Rural older and oldest elderly respondents indicated the lowest good health status (OR = 1.00) compared to other residents (urban: OR = 1.670; 95% CI: 1.071-2.606; and other town dwellers: OR = 1.847; 95% CI: 1.327-2.572). Good health of this age cohort is not influenced by income or social standing, and there is a need to examine lifestyle risk factors; disease indicators and psychological conditions, as this may provide more answers to the good health of Jamaicans 75 years and older. A quantitative assessment has provided us with answers, but it is clear from the findings that more information is needed on this age cohort. The researcher recommends the use of qualitative methodologies to provide in-depth understanding of those factors that determine good health of this age cohort.

Keywords: Good health, determinants of good health, older elderly, oldest elderly, Jamaica.

INTRODUCTION

Globally, statistics revealed that the growth rate for people 80 years and older was 3.9 percent (2000-2005) and that this was twice more than that for elderly 60 years and over. Comparatively, the average annual rate of growth for the population 80 years and older was 4.0 percent for Latin America and the Caribbean, which was 1.4 times more than that for the population 60+ years [1]. For the Caribbean, the average annual growth rate for the population 80+ years was 0.7 times less than the younger elderly. Moreover, the annual rate of growth for the population of Jamaica since 2003 is between 0.50 and 0.45, which is less than the rate of growth for the population 60 + years (1.2 percent) and 80+ years (2.0 percent). People are not only living longer in the Caribbean, but traditional health indicators such as total fertility rate, crude birth and death rates, infant and maternal mortality have been relatively stable since 1996.

For some time now, Caribbean nations such as Barbados, Cuba, Dominica, Guadeloupe, Jamaica, Martinique and

Trinidad and Tobago have been experiencing demographic transition [1-5]. This is a shifting of the population from younger ages to older ones (ages 60 years and older or elderly) owing to reduced child and adult mortality, better public health and environmental conditions, higher standard of living and a reduction in the population under 15 years. Those countries have in excess of 8 percent (2007) of their population 60 years and older [1-5]. Some demographers argue that population ageing occurs when 8 percent and more of a country's population are elderly [6]. Population ageing in the Caribbean is similar to the experiences of the rest of the world, but it is more rapid, with a high degree of poverty and significant gender differences and inequalities. Another noticeable aspect of the ageing process is the average annual rate of growth of the population 80 years and older in comparison with 60+ years.

Undoubtedly ageing is a biological process, and continues throughout one's lifetime. Over the lifespan of an individual he/she shifts from one birthday to the next, and equally so is the case for morbidity, health status and quality of life. Health literature has shown that biological ageing is correlated with increased morbidity, mortality and poor health status [7, 8], which explains the health disparity (including functional and working capacity) between younger and older ages (60+ years). This justifies the rationale for the

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WHO's disability adjusted life expectancy (DALE or healthy life expectancy) [9]. Life expectancy that has been widely used by demographers to assess the health status of a population is computed from mortality data, and a critical assumption is that all people subscribe to the same mortality patterns. Embedded in this construct is the fact that living means good health status. This, however, is not the case, as people can be alive but not enjoying their lived years, because of ailments which are not life-threatening but debilitating health conditions. This gave rise to the WHO's recognition that the emphasis should not be on life expectancy but on healthy life expectancy. Here, it argued for the discounting of life expectancy for the number of years lived with disabilities or illnesses.

The elderly have a greater probability of facing health conditions compared to people of young ages owing to their biological composition, which implies that the older an elderly person becomes, the less likely it is that he/she will have good health. The WHO [1] calculated that developing countries' life expectancy should be discounted by 9 years, and this should be 8.4 years for men and 9.5 years for women in Jamaica. Although life expectancy has doubled for men and women in Jamaica over the last 100 years [2, 10], people are living longer with more disabilities and health conditions. According to WHO [11], "In developing countries, their (elderly – ages 60 years and older) situation is generally much less widely-known and their needs and contributions have been largely invisible." This is not the case in Jamaica, as Bourne [3, 10, 12], Eldemire [13-20], and others have [21-27] extensively reviewed different aspects of the life of people and/or elderly women and men. Although those studies have been done, an extensive review of health literature in Jamaica found no study that has investigated determinants of good health status of the older and oldest elderly Jamaicans. Hence, the aim of this study is to examine factors that explain good health status of the older elderly (ages 75 to 84 years) and the oldest elderly (ages 85+ years) in Jamaica.

METHODS

The sub-sample for the current study was 1,069 older and oldest elderly respondents (ages of 75 years and older) extracted from a nationally representative cross-sectional survey of 25,018 Jamaicans (Jamaica Survey of Living Status, JSLC). The survey was drawn using stratified random sampling. This design was a two-stage stratified random sampling design where there was a Primary Sampling Unit (PSU) and a selection of dwellings from the primary units. The PSU is an Enumeration District (ED), which constitutes of a minimum of 100 dwellings in rural areas and 150 in urban areas. An ED is an independent geographic unit that shares a common boundary. This means that the country was grouped into strata of equal size based on dwellings (EDs). Based on the PSUs, a listing of all the dwellings was made, and this became the sampling frame from which a Master Sample of dwelling was compiled, which in turn provided the sampling frame for the labour force. Ten percent was selected for the survey (JSLC).

This study used JSLC 2002 which was conducted by the Statistical Institute of Jamaica (STATIN) and the Planning Institute of Jamaica (PIOJ) between June and October 2002. The researchers chose this survey based on the fact that it

was the second largest sample size for the survey in its history (since 1988 to 1998), and in that year the survey contained questions on crime and victimization and the physical environment, unlike previous years. A self-administered questionnaire was used to collect the data, which were stored and analyzed using SPSS for Windows 16.0. The questionnaire was modelled from the World Bank's Living Standards Measurement Study (LSMS) household survey. There are some modifications to the LSMS, as JSLC is more focused on policy impacts. The questionnaire covered areas such as socio-demographic, economic and wealth variables, crime and victimization, social welfare, health status, health services, nutrition, housing, immunization of infants and physical environment. The non-response rate for the survey was 27.7%.

Descriptive statistics such as mean, standard deviation (SD), frequency and percentage were used to analyze the socio-demographic characteristics of the sample. Chi-square was used to examine the association between non-metric variables, and an Analysis of Variance (ANOVA) was used to test the relationships between metric and non-dichotomous categorical variables. Logistic regression examined the relationship between the dependent variable and some predisposed independent (explanatory) variables, because the dependent variable was a binary one (self-reported health status: 1 if reported good health status and 0 if poor health).

The results were presented using unstandardized B-coefficients, Wald statistics, Odds ratio and confidence interval (95% CI). The predictive power of the model was tested using the Omnibus Test of Model, and Hosmer and Lemeshow [28] was used to examine goodness of fit of the model. The correlation matrix was examined in order to ascertain whether autocorrelation (or multicollinearity) existed between variables. Based on Cohen and Holliday [29] correlation can be low (weak) - from 0 to 0.39; moderate - 0.4-0.69, and strong - 0.7-1.0. This was used to exclude (or allow) a variable in the model. Wald statistics were used to determine the magnitude (or contribution) of each statistically significant variable in comparison with the others, and the Odds Ratio (OR) for the interpreting of each significant variable.

Multivariate regression framework [10, 12] was utilized to assess the relative importance of various demographic, socio-economic characteristics, physical environment and psychological characteristics, in determining the health status of Jamaicans; and this has also been employed outside of Jamaica [30, 31]. This approach allowed for the analysis of a number of variables simultaneously. Secondly, the dependent variable is a binary dichotomous one and this statistic technique has been utilized in the past to do similar studies. Having identified the determinants of health status from previous studies, using logistic regression techniques, final models were built for women in general as well as for each of the geographical sub-regions (rural, peri-urban and urban areas) using only those predictors that independently predict the outcome. A p-value of 0.05 was used to for all tests of significance.

The proposed model which this study seeks to evaluate is the health status of Bourne [10, 12] which was used previously to model health status of Jamaican.

$H_i = f(W_i, HH_i, Pmc_i, C_i, MR_i, AR_i, ED_i, SS_i, CR_i, (\sum NA_i, PA_i), M_i, F_i, CH_i, A_i, X_i, A_i, HI_i, LL_i, En_i, Y_i, V_i, \epsilon_i) (1)$

Health status of person i H_i , is a function of W_i is the two wealthiest quintiles of person i . 1 if yes, 0 if two poorest quintiles; HH_i is household head of person i . 1 if yes, 0 if otherwise; Pmc_i is cost of medical care of person i , in US dollars; C_i is average consumption per person in household, in Jamaican dollars; MR_i is marital status of person i ; AR_i is area of residence of person i ; ED_i is educational level of person i ; SS_i is having social support of person i . 1 if yes, and 0 if no; CR_i is crowding of person i , in numbers; $(\sum NA_i, PA_i)$ is a psychological status which is the summation of negative affective status of person i , NA_i where values are in continuous numbers; and, PA_i is positive affective psychological status of person i , where values are in continuous numbers; M_i is number of men in household of person i ; F_i is number of women in household of person i ; CH_i is number of children below the age of 14 years of person i ; A_i is asset owned of person i , in continuous numbers; X_i is gender of respondent i ; A_i is age of person i , in continuous numbers; HI_i is ownership of private health insurance; LL_i is living arrangement where 1 = living with family members or relative, and 0 = otherwise; En_i is physical environment of person i . 1 if affected by flood, landslides, soil erosion, 0 if no; Y_i is average income per person in household (this variable is measured by total expenditure, and V_i is crime of person i , where values are continuous numbers, and ϵ_i is the residual error.

Using data on older and oldest elderly Jamaicans, this study found that self-reported health status can be predicted by two variables [Eqn. (2)]

$$H_i = f(AR_i, X_i, \epsilon_i) \quad (2)$$

MEASURES

Self-reported Health Status is self-assessed illness (cold, diarrhoea, asthma attack, hypertension, diabetes mellitus or any other illnesses) reported by respondents in the last 4 weeks of the survey period. Good Health Status is a dummy variable, where 1 = good health (not reporting an ailment, injury or dysfunction) and 0 = poor health (self-reported illness, injury or ailment). Household crowding is the average number of persons living in a room excluding kitchen, bathroom and verandah. Physical Environment is the summation of responses as reported by respondents on suffering the effects of landslides, property damage due to rains, flooding; or soil erosion in the last 4 weeks of the survey period. Psychological Conditions are the psychological state of an individual, and this is sub-divided into positive and negative affective psychological status. Positive Affective Psychological Status refers to the number of responses that are hopeful and optimistic about the future and life generally. Negative Affective Psychological Status refers to the number of respondents having lost a breadwinner and/or family member, experienced loss of property, been made redundant, or failed to meet household and other obligations. Age is the number of years lived, which is also referred to as age at last birthday. This is a continuous variable, ranging from 15 to 100 years. Age is classified into three groups: young respondents aged 15 to 30 years, older adults 31 to 59 years, and elderly 60 years and older. Crime and Victimization Index (Crime Index) measures the number of cases and severity of crimes

committed against a person or his/her family members, but not against property. Using Cohen and Holliday's [29] correlation guideline, low crime was from 0 to 34; moderate from 35 to 61, and high from 62 to 88. Older elderly is defined as the chronological age of 75 years to 84 years. Oldest elderly is the chronological age of 85 years and older. Social support (or network) denotes different social networks in which the individual is involved (1 = membership of and/or visits to civic organizations or having friends that visit one's home or with whom one is able to network, 0 = otherwise).

RESULTS

Demographic Characteristic of Sample

The sample was 1,069 respondents (42.5 percent men and 57.6 percent women), of which there were 74.2 percent older elderly and 25.8 percent oldest elderly. Forty-three percent were classified as either poor or poorest; 71 percent were never married (included common-law), separated, divorced or widowed; 5 percent had private health insurance coverage; 8 percent received some form of retirement; 68 percent lived in rural areas compared to 32 dwelling in urban areas (of this 21 percent lived in other towns and 11 in cities); 67 percent had at most primary level education, of which 2 percent reported tertiary level education; 48.3 percent indicated that they had good health compared to 51.7 percent with poor health status; 41 percent reported having suffered the effects of soil erosion, landslide or some other form of natural disaster. Crimes affecting the sample were very low (1.12 ± 0.84); 52.1 percent reported visits to private health care facilities compared to 47.9 percent public health care facilities, mean consumption per person in household was US\$699.13 \pm US\$627.64; 55.7 percent of respondents indicated that they had social support; 20.7 percent lived alone; 35.5 percent were living with grandchildren, and 29.2 percent of the sample was married.

On further examination of some of the aforementioned variables by age cohort, interesting results came to light (Table 1). The findings revealed that there was no statistical difference between the reported good health status of older elderly respondents (48.7%) compared to that of the oldest elderly respondents (45.5%), $p = 0.385$. The same thing was found with private health insurance coverage for older elderly respondents compared to oldest elderly respondents ($p = 0.184$). However, a statistical correlation was found between sex of respondents and age cohort ($p = 0.003$). Fifty-five and one tenth percent of older elderly respondents were females compared to 44.9 percent of the oldest elderly. More of the respondents dwelled in rural areas, with there being no statistical difference between older elderly and oldest elderly respondents ($p = 0.121$). A high percentage of the sample owned their own home (87.2 percent), and there was no statistical difference between the older elderly (87.7 percent) and oldest elderly (85.5 percent) (Table 1).

The crime index showed that this affected more urban than rural elderly respondents (urban 1.61 ± 7.53 ; rural 0.74 ± 3.02) ($p = 0.007$) (Table 2). The findings revealed that poverty was 2.2 times greater in rural than in urban areas (12.4 percent of urban residents were below the poverty line); higher level education was greater in urban than rural areas; private health insurance coverage was 5.2 times greater for urban residents compared to rural residents (2.0

Table 1. Sociodemographic Characteristics of Sample by Old and Oldest Elderly Cohorts

Variable	Older Elderly n (%)	Oldest Elderly n (%)	P Value
Sex			0.003
Male	356 (44.9)	97 (35.1)	
Female	437 (55.1)	179 (64.9)	
Health Insurance			0.184
No	742 (95.0)	256 (96.6)	
Yes	39 (5.0)	9 (3.4)	
Good Health Status			0.385
No	403 (51.3)	140 (52.6)	
Yes	382 (48.7)	126 (47.4)	
Education			0.170
Primary and below	491 (65.2)	171 (70.7)	
Secondary	241 (32.0)	68 (28.1)	
Tertiary	21 (2.8)	3 (1.2)	
Area of residence			0.121
Urban	259 (32.7)	79 (28.6)	
Rural	534 (67.3)	197 (71.4)	
House Tenure			0.613
Rent free	61 (7.7)	25 (9.1)	
Rented	36 (4.5)	15 (5.5)	
Owned	696 (87.8)	235 (85.5)	

percent); self-reported good health was greater for urban (58.9 percent) than rural respondents (43.5 percent) (Table 2). Also retirement income was 2.4 times more for urban respondents than for rural respondents (5.7 percent).

Table 3 revealed that there was a statistical correlation between health insurance coverage and retirement income ($p = 0.001$). Respondents who reported receiving retirement income were 5.8 times more likely to have reported private health insurance coverage than the elderly who had not reported having received retirement income (Table 3).

Of the sample ($N = 1,069$), 41.3 percent answered the question of "Is your illness diagnosed as (chronic) recurring illness?" Of this number, 97.1 percent indicated a diagnosed (chronic) recurring ailment. A cross tabulation of diagnosed (chronic) recurring illness and age cohort of respondents showed no statistical correlation ($p = 0.509$). Notwithstanding the aforementioned p value, 75.5 percent of those who responded to this question reported diabetes mellitus, hypertension and arthritis, with 37.3 percent having hypertension and 21.9 percent diabetes mellitus (Table 4). The number of respondents who indicated hypertension, diabetes and arthritis of the sample was 31.3 percent ($n = 335$); with 15.4 percent hypertension, 9.1 percent diabetes mellitus and 6.8 percent arthritis.

With respect to those who indicated being diagnosed (chronic) recurring ailment, 42.2 percent of women reported hypertension compared to 29.9 percent of men; 5.7 percent of men had asthma compared to 1.9 percent of women; 24.6

percent of women reported diabetes mellitus compared to 17.8 percent of men; and 21.3 percent of men reported arthritis compared to 13.4 percent of women (Table 5).

Multivariate Analysis

Predicting Good Health Status of Older and Oldest Elderly Jamaicans. Two factors were found to be statistically significant predictors of good health status of older and oldest elderly respondents. These were area of residence and sex of respondents. The model had a statistically significant predictive power (chi-square = 37.258, $p = 0.001$; Hosmer and Lemeshow goodness of fit chi-square = 5.785, $p = 0.671$). In addition, it was revealed that overall 58.39% of the data were correctly classified: 69.6% of those who indicated poor health status and 45.7% of those who indicated good health status (Table 6).

Based on Table 6, older and oldest elderly men reported a greater good health status than older and oldest elderly women (OR = 1.410; 95% CI: 1.048-1.897). Rural older and oldest elderly respondents indicated the lowest good health status (OR = 1.00) compared to other residents (urban: OR = 1.670; 95% CI: 1.071-2.606; and other town dwellers: OR = 1.847; 95% CI: 1.327-2.572). None of the other factors such as consumption, social support, crowding, health insurance coverage, cost of medical care, education, age of respondents, and the physical environment predicted good health status of older and oldest elderly respondents ($p > 0.05$).

Table 2. Sociodemographic Characteristics of Sample by Urban-Rural Areas

Variable	Urban n (%)	Rural n (%)	p Value
Good Health Status			0.001
No	137 (41.1)	406 (56.5)	
Yes	196 (58.9)	312 (43.5)	
Retirement Income			0.001
No	292 (86.4)	689 (94.3)	
Yes	46 (13.6)	42 (5.7)	
Gender			0.185
Male	136 (40.2)	317 (43.4)	
Female	202 (59.8)	414 (56.6)	
Marital status			0.282
Married	97 (29.4)	207 (29.1)	
Never married (include common law)	80 (24.2)	175 (24.6)	
Divorced	10 (3.0)	8 (1.1)	
Separated	6 (1.8)	18 (2.3)	
Widowed	135 (41.5)	305 (42.9)	
Age group			0.214
Older Elderly	259 (76.6)	534 (73.1)	
Oldest Elderly	79 (23.4)	197 (26.9)	
Utilization of Health Facilities			0.293
Private	39 (55.7)	119 (51.1)	
Public	31 (44.3)	114 (48.9)	
Private Health Insurance coverage			0.001
No	296 (89.7)	702 (98.0)	
Yes	34 (10.3)	14 (2.0)	
Education			0.001
Primary and below	196 (61.4)	466 (68.9)	
Secondary	105 (32.9)	204 (30.2)	
Tertiary	18 (5.6)	6 (0.9)	
Social class			0.001
Poorest	42 (12.4)	197 (26.9)	
Poor	45 (13.3)	171 (23.4)	
Low Middle	59 (17.5)	136 (18.6)	
Upper Middle	77 (22.8)	117 (16.0)	
Wealthiest	115 (34.0)	110 (15.0)	
Per capita consumption* Mean (SD)	US\$1,820.23 (\$1,399.19)	US\$1,263.21 (\$1,187.49)	0.001
Crowding Mean (SD)	1.05 (0.85)	1.15 (0.83)	0.071
Crime Index Mean (SD)	1.61 (7.53)	0.74 (3.02)	0.007
Living Alone	75 (22.2)	146 (20.0)	0.405

*US\$1 = Ja.\$50.97.

Table 3. Health Insurance by Retirement Income

	Retirement Income		
	No	Yes	Total
Health Insurance Coverage			
No	96.7	81.0	100.0
Yes	3.3	19.0	4.6
Total	962	84	1,046

$\chi^2(1) = 4.610, p \text{ value} = 0.001.$

Table 4. Chronic (Recurring) Illness by Age Cohort

	Age Cohort		
	Older Elderly	Oldest Elderly	Total
Chronic Illness			
Cold	3.9	2.8	3.6
Diarrhoea	1.2	2.8	1.6
Asthma	3.9	1.9	3.4
Hypertension	23.4	17.6	21.9
Diabetes	37.1	38.0	37.3
Arthritis	16.5	16.7	16.5
Other	11.7	15.7	12.7
No	2.4	4.6	2.9
Total	334	108	442

$\chi^2(7) = 6.269, p \text{ value} = 0.509.$

Table 5. Chronic (Recurring) Illness by Gender

	Gender		
	Male	Female	Total
Chronic Illness			
Cold	4.6	3.0	3.6
Diarrhoea	1.7	1.5	1.6
Asthma	5.7	1.9	3.4
Hypertension	17.8	24.6	21.9
Diabetes	29.9	42.2	37.3
Arthritis	21.3	13.4	16.5
Other	16.7	10.1	12.7
No	2.3	3.4	2.9
Total	174	268	442

$\chi^2(7) = 19.908, p \text{ value} = 0.006.$

DISCUSSION

The current study has shown that the health status of older and oldest elderly in Jamaica is relatively moderate, as 48 out of every 100 older and oldest elderly reported good health status. It was found that there was no statistical difference between the self-reported good health status of older people (ages 75 – 84 years) and oldest elderly (ages 85 years

Table 6. Logistic Regression on Good Health of Old and Oldest Elderly Jamaicans and Some Explanatory Variables, N = 958

Variables	Coefficient	Std Error	Wald Statistics	p Value	Odds Ratio	95.0% C.I.	
						Lower	Upper
Average Consumption	0.000	0.000	0.334	0.563	1.000	1.000	1.000
Environment	0.103	0.143	0.517	0.472	1.108	0.837	1.468
Other Towns	0.614	0.169	13.213	0.000	1.847	1.327	2.572
Urban	0.513	0.227	5.115	0.024	1.670	1.071	2.606
†Rural area					1.000		
Social support	-0.165	0.134	1.513	0.219	0.848	0.652	1.103
Sex	0.343	0.151	5.145	0.023	1.410	1.048	1.897
Number of male	0.008	0.074	0.012	0.914	1.008	0.872	1.165
Number of female	0.084	0.076	1.227	0.268	1.088	0.937	1.262
Number of children	0.050	0.062	0.644	0.422	1.051	0.930	1.188
Age	-0.019	0.012	2.501	0.114	0.981	0.957	1.005
Middle Quintile	0.023	0.188	0.015	0.901	1.024	0.709	1.478
Wealthiest Quintiles	0.088	0.205	0.185	0.668	1.092	0.731	1.631
†Poorest-poor quintiles					1.000		
Health Insurance	0.241	0.326	0.549	0.459	1.273	0.672	2.411
Cost of medical care	0.000	0.000	0.203	0.652	1.000	1.000	1.000
Primary Education	0.180	0.142	1.592	0.207	1.197	0.905	1.582
Constant	0.774	1.024	0.572	0.450	2.168	-	-

Nagelkerke R-square = 5.0%.

-2 Log likelihood = 1325.803.

Hosmer and Lemeshow chi-square = 5.785; P = 0.671.

Model: Omnibus Test - chi-square = 37.258, p = 0.001.

Overall correct classification = 58.3%.

Correct classification of cases of poor health status = 69.6%.

Correct classification of cases of good health status = 45.7%.

†Reference group.

and older). Nine of every 100 older-to-oldest elderly had diabetes mellitus; 15 out of every 100 hypertension and 7 out of every 100 had arthritis. In addition, there was a statistical correlation between good health status and area of residence, or self-reported (chronic) recurring illness and age cohort. Furthermore, the data showed that older and oldest elderly Jamaicans who dwelled in rural area had the lowest self-reported good health compared to those who resided in other towns and urban areas. Continuing, those who resided in other towns reported the greatest good health status. Approximately, twice more women reported being diagnosed with (chronic) recurring illness compared to men.

Eldemire [32] opined that ageing population is associated with increased disability, and if this is so then there should be more illness with ageing. The current study does not concur with Eldemire findings, that as people age (older to oldest elderly) they would report more disabilities. This approach emphasizes the longevity of the cells, in relation to the number of years the organism can live. Thus, in this construction the human body (an organism) is valued based on physical appearance and/or state of the cells. Embedded in this apparatus is the genetic composition of the survivor.

Gompertz's law in Gavriolov and Gavrilova [7] demonstrates the fundamental quantitative theory of ageing and mortality of certain species (the examples here are as follows – humans, human lice, rats, mice, fruit flies, and flour beetles). Gompertz's law went further to establish that human mortality increases twofold with every 8 years of an adult life, which means that ageing increases in geometric progression. This phenomenon means that human mortality increases with the age of the human adult, but that this becomes less progressive in advanced ageing. Thus, biological ageing is a process where the human cells degenerate with years (i.e. the cells die with increasing age), which is explored in evolutionary biology [33, 34]. But studies have shown that using the evolutionary theory for "late-life mortality plateaus" failed because of the unrealistic set of assumptions on which the theory is based [35-38].

The reliability theory, on the other hand, is a better fitted explanation for the ageing of humans than that argued by Gompertz's law, as the 'failing law' speaks to the deterioration of human organisms with age [7] as well as the non-ageing term. The latter, based on Gavrilov and Gavrilova [7], can occur because of accidents and acute infection, which are called "extrinsic causes of death. While Gompertz's law speaks to mortality in the ageing organism due to age-related degenerative illnesses such as heart diseases and cancers, a part of the reliability function is Gompertz's function as well as the non-ageing component. The current study did not find a statistical difference between self-reported diagnosed (chronic) recurring illness and older and oldest elderly elderly; this can be as a result of the data. Despite the fact that people are the best judge of what affects them, there is a clear disparity here between biological ageing theorists' findings and the self-reported results of older and oldest elderly Jamaicans.

The World Health Organization [39, 40] put forward a position that there is a disparity between contracting many diseases and the gender constitution of an individual. One health psychologist, Rice [41], in concurring with WHO, argued that differences in death and illnesses are the result of

differential risks acquired from functions, stress, life styles and 'preventative health practices'.

Rice believed that this health difference between the sexes is due to social support. Other scholars explained that it is owing to epidemiological trends [42] i.e. lifestyle practices justify the advantages that women enjoy compared to men concerning health status. The current study found that older and oldest elderly men had superior good health status to that of women, with men being 1.4 times more likely to report good health than women. A survey done by Rudkin found that women have lower levels of economic wellbeing than men [43], and this is one of the justifications for the latter group reporting superior good health status. This finding is further sanctioned by Havenman *et al.* [44] whose study revealed that retired men's wellbeing was higher than that of their female counterparts, because men usually received more material resources, and more retirement benefits compared to women ages 65 years and older. Thus, with men receiving more than women and having more durable possessions than women, their general satisfaction with life (including health) will be better than their women counterparts. There is a paradox here, as Bourne showed from statistics [3, 10] that the life expectancy of women in Jamaica has been at least 3 years (1880-1882) to 6 years (2002-2004) longer, yet they have a lower good health status.

A part of the gender health disparity that was put forward is owing to the culture. Among the gender roles ascribed to Caribbean males are the protection of the family, children, wife or girlfriend, and parents. The man is expected to handle the laborious tasks such as lifting heavy items, pruning trees and hedges and taking out the garbage, while maintaining a special protective role for his parents, in particular his mother. A Caribbean male finds it impossible to tolerate someone criticizing his mother or belittling her, without becoming abusive or even confrontational. It is not that Caribbean males take a minimalistic role in regard to the family, but it is primarily the gender specification of these societies along with task specialization. Another cultural bias that emerged from the laborious tasks they are expected to undertake is illness. Illness is an indicator of weakness and lowered masculinity, which explains men's unwillingness to seek preventative care, visit health facilities and report illness. This then accounts for the lowered good health status of women and the greater one reported by men. Despite this reality, let us examine particular health conditions.

Women have a higher propensity than men to contract particular conditions such as depression, osteoporosis and osteoarthritis [39, 45]. Herzog [45] noted that "... it appears that older women are more likely to be impaired by their health problems, while older men are more likely to die from them." A study by Schoen *et al.* [46] found that a group of adolescents revealed something different from that which was reported by WHO. The researchers found that males are more likely than females to feel stressed; 'overwhelmed' or 'depressed', and they attributed this to men's limited social networks. Other researchers have agreed with Schoen *et al.* that men in general tend to be more stressed and less healthy than females, and further argued that men can use denial, distraction, alcoholism and other social strategies to conceal their illness or disabilities [47-50]. On the other hand, Herzog [45] in *Physical and Mental Health in Older Women*,

using studies from a number of experts, wrote that females had higher rates of depression than their male counterparts.

Data for the Caribbean showed that hypertension and arthritis are morbidities that significantly plague both men and women [26]. The current study revealed that diabetes mellitus was the leading cause of illness among older and oldest elderly in Jamaica, followed by hypertension and arthritis, which differs from a past study [17] that had hypertension as the leading cause of morbidity of the elderly (43.4 percent), followed by arthritis (39.8 percent) and diabetes mellitus (10.2 percent). When reported illness was cross tabulated by sex of older and oldest elderly respondents, the findings showed that 1.4 percent more women had diabetes mellitus than men and this was the same for hypertensive older and oldest elderly Jamaicans. On the other hand, there were 1.6 times more old and oldest elderly Jamaican men with self-reported arthritis than women. These chronic non-communicable diseases continue to interface within the functional lives of the elderly, which means that they are indeed living longer but are faced with lower levels of good health than young adults (ages 15 to 29 years) and middle-aged adults (ages 30 to 59 years). However, there was no statistical difference between self-reported ill and older and oldest elderly age cohorts in this study, suggesting that health disparity is not between older elderly and oldest elderly Jamaicans, but rather between older and oldest elderly and other age cohorts, such as young adults and middle-aged adults. Bourne's study [10] of 3,009 elderly Jamaicans (ages 60 years and older) found a low general wellbeing of respondents (3.9 out of 14 ± 2.3) which concurs with the current study. This study has refined the aforementioned one, by showing that there is no statistical difference between the self-reported health status of older and oldest elderly Jamaicans; but it did not examine the young old (ages 60 to 74 years) and so it is unable to state whether there was a difference between young old and old and oldest elderly respondents.

The old and oldest elderly are less likely to be productively employed in the labour force than middle-aged adults. This does not mean that they cannot be actively engaged in many other activities. Old and oldest elderly Jamaicans are involved in social work, home gardening, and actively engaged in extended family functions such as the rearing of grand-children. In this study 36 out of every 100 old and oldest elderly reported that their grandchildren lived with them. In Jamaica, the extended family is still cohesive [20] and the current study showed that this has not changed, as approximately 54 out of every 100 persons were either married or in common-law unions; but 8 out of every 10 old and oldest elderly were not living alone, suggesting that the extended family is still alive in 2002.

In 1997, Statistics from the Planning Institute of Jamaica and the Statistical Institute of Jamaica [51] revealed that 54.3 percent of elderly (ages 60 years and over) lived in rural areas, and the current study showed that approximately 7 out of every 10 old and oldest elderly lived in rural areas, compared to 6 out of 10 for those 60 years and older of the population. In addition, 20 out of every 100 Jamaicans were below the poverty line, compared to 25 out of every 100 in rural Jamaica. Given that the elderly substantially lived in rural areas and that poverty for this group was 10.2 percent

(in 2007), it is not surprising that the old and oldest elderly in this area of residence had a lower level of good health status than the urban old and oldest elderly in Jamaica. It should be noted here that studies have shown that income was related to good health [52, 53], but this is not the case for the current study (old and oldest elderly Jamaicans).

Poverty leads to ill-health, suggesting that the poor are less likely to have superior 'good health status' to those in middle to upper classes [54]. Murray [54] opined that the interrelation between poverty and health is expressed in poor nutrition, improper sanitation and water quality and inadequate housing, and these contribute to a lower health status. Other studies [55-57] have refined this relationship by showing that persistent poverty affects health and even mortality, as well as accounting for much of the malnutrition in developing countries [58]. Poverty and poor health is not only outside of the Caribbean as a study conducted in Jamaica [59] revealed that the least health was reported by those in the lower class. This is not the case for the old and oldest elderly Jamaicans, as there was no statistical difference between the various social standings (i.e. lower, middle and upper classes) and good health status. The rationale for this is embedded in the definition of health, which means that health is tied to the living by more than difficulties of hypertension, diabetes mellitus and arthritis. Those conditions are not viewed as poor health, as they are permanent conditions, and therefore may not be construed as such.

In studies done on elderly Jamaicans (ages 60+ years), physical environment, age, the number of males, females and children in a household, education, consumption, health insurance and cost of medical care were significantly related to good health [3, 4, 10], as is also the case in Barbados [30], Canada [60] and the United States [61]. However, those variables are not related to good health for the old and oldest elderly population in Jamaica, suggesting that variables are not what account for good health in old and oldest elderly respondents. In Bourne studies on elderly Jamaicans generally [3, 4, 10], it was revealed that crowding, marital status, area of residence, physical environment and gender accounted for the majority of the explanatory power of good health, and that only crowding and marital status were not included in the current study, indicating that good health for ages 75 years and older was not due to identified variables or those affecting 60+ years and older. Embedded in this figure is that most of the variables that were predictors of good health of elderly were more explanations of young elderly (60 to 74 years) than the older and oldest elderly elderly.

The validity of using people's assessment of their life satisfaction and health is old and has already been resolved. Nevertheless, it will be succinctly put forward here for those who are not cognizant of this discourse. Scholars have established that there is a statistical association between subjective wellbeing (self-reported wellbeing) and objective wellbeing [62-68], and Diener went further when he found a strong correlation between the two variables [68]. Gaspari [63] opined on the difficulty of objective quality of life (GDP per capita) and the need to use self-reported wellbeing in assessing the wellbeing of people. He wrote, "So its objectivism is already contaminated by post-welfarism, opening the door to a mixed approach, in which preferences matter as well as objective wellbeing" [63], which speaks to the neces-

sity of using a measure that approximates more to this multi-dimensional construct, rather than continuing with the traditional income per capita approach. Another group of scholars emphasized the importance of measuring wellbeing outside of welfarism and/or pure objectification, when they said that “Although GDP per capita is usually used as a proxy for the quality of life in different countries, material gain is obviously only one of many aspects of life that enhance economic wellbeing” [69] and that wellbeing depends on both the quality and the quantity of life lived by the individual [70]. Another study found that self-rated health was a strong predictor of mortality, and remained the same even when controlled for physical health [64]. As such, self-rated health encompasses a more extensive coverage of health (such as physical status; cognitive, emotional and social health) that are in keeping with old age than the objective health, which are subtle and difficult to measure objectively using physical health assessment.

CONCLUSIONS

In summary, we now have a better understanding of those factors that account for older and oldest elderly good health. While the data were well fitted for the model, the explanatory power was low for those identified predictive factors. This means that the good health of this age cohort is not influenced by income, social standing and many other factors that predict health status for the general populace, and that there is a need to examine lifestyle risk factors, culture and the meaning system of this group, as those variables may provide more answers to the good health of Jamaicans 75 years and older. This quantitative assessment has provided us with pertinent answers, but it is clear from the findings that more information is needed on this age cohort and that this can be had by qualitative methodology. The researcher recommends the use of qualitative methodologies to provide in-depth understanding of the culture and meaning system of this cohort as they can provide valuable insight into some of the determinants of good health.

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