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## ORIGINAL ARTICLE

### Health Of Males In Jamaica

PAUL A. BOURNE

#### ABSTRACT

**Background:** Studies on males in the Caribbean have been on marginalization; fatherhood; masculinity and none on the changing pattern of diseases. **Aims:** This study aims to 1) provide a detailed epidemiological profile of the health conditions; 2) indicate the changing pattern of the health conditions; 3) calculate the mean age of having reported illness or not; 4) compute the mean age of particular health conditions; 5) state whether the mean age of having a particular illness is changing; 6) determine whether there is a significant statistical correlation between health status and self-reported illness; 7) identify factors that correlate with health status; and 8) ascertain the magnitude of each determinant of the health status. **Methods and materials:** The current study used secondary cross-sectional data taken from two nationally representative surveys. A subsample of 12,332 males out of 25,018 respondents and 3,303 males from 6,783 respondents were extracted from the surveys of the years 2002 and 2007 respectively. **Statistical analysis used:** The Statistical Package for the Social Sciences for Windows, Version 16.0 was used for the analysis. Multiple logistic regressions were used to explain the variables of the models. **Results:** There is a possibility of a diabetes mellitus epidemic among Jamaican males, as the yearly average increase was found to be 156% for the studied period. Predictors of poor self-reported illness of males in Jamaica for the year 2002 were age (Odds ratio, OR = 1.044; 95% CI = 1.038, 1.049;  $P < 0.05$ ); urban area (OR = 1.547, 95% CI = 1.172, 2.043;  $P < 0.05$ ); and consumption (OR = 1.183; 95% CI = 1.056, 1.327;  $P < 0.05$ ). Non self-reported illness of males in Jamaica for the year 2007 can be predicted by good health status (OR = 17.801; 95% CI = 10.761, 29.446;  $P < 0.05$ ); fair health status (OR = 2.403; 95% CI = 1.461, 3.951;  $P < 0.05$ ); age (OR = 0.967; 95% CI = 0.957, 0.977;  $P < 0.05$ ); urban area (OR = 1.579, 95% CI = 1.067, 2.336;  $P < 0.05$ ); and consumption (OR = 0.551; 95% CI = 0.352, 0.861;  $P < 0.05$ ). **Conclusion:** The findings are far reaching and can be used to guide health policy formulation and intervention programmes in the future.

**Key words:** Health, self-reported illness, health status, health conditions, males, public health, Jamaica

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## Introduction

In the Caribbean, studies on males have been primarily done on masculinity and fatherhood [1]-[6]; male marginalization [7]-[10]; survivability [11], self-reported illnesses, health-care utilization and mortality [12]-[25]. These studies exclude a comprehensive examination of the health status of males as well as an inquiry into the changing pattern of illnesses facing this cohort. The Planning Institute of Jamaica, (PIOJ) and the Statistical Institute of Jamaica, (STATIN), however, have provided the general self-reported illness and medical care-seeking behaviour of the population and these have been disaggregated by the sexes [26]. Although those issues provide pertinent information, they are insufficient for public health practitioners to sufficiently plan intervention programmes.

Since 1989, when PIOJ and STATIN began collecting data with a modified World Bank Living Conditions instrument, males have reported less illness than females; visited health care-practitioners less than females and yet, their life expectancy has been between 2-6 years less than that of their female counterparts [27]. Concurring, STATIN's data revealed that of the 5 leading causes of mortality in Jamaica, males outnumbered females in 4 categories [28]; and the morbidity figures published by the Jamaican Ministry of Health (MOH) showed that they outnumbered females in 7 of the 10 leading causes of illnesses [29],[30]. Those results demonstrated that the health of males cannot be left to self-reported illness, healthcare utilization and medical care expenditure. Despite the value of such information, health is more than illness, mortality and/or life expectancy.

In the late 1940s, the health discourse was such that the World Health Organization (WHO) in the Preamble to its Constitution joined the debate and offered a conceptual definition of health [31]. The WHO [31] penned that health is more than the mere absence of diseases to include social, psychological and physiological wellbeing. This was adopted by Engel [32]-[36] who even coined the term 'biopsychosocial

model' as the new thrust in mental ill patient care. He, like the WHO, opined that humans are mind, body and social agents, which denote that their care must incorporate all these facets as against the old biomedical approach, which was only concerned about diseases and not wellbeing. This approach has revolutionized the way how health care is delivered, measured and planned for. Those are the very reasons why an inquiry into more than self-reported illness, healthcare utilization and medical care expenditure is needed, as the health is more than illness (subjective or objective). This brings into focus the subjective or objective discourse into health and their usage in health research and diagnostic health care.

In response to a need to expand the measures of health away from diagnosed illness, mortality and life expectancy (or objective indexes), researchers like Diener [37],[38]; Veenhoven [39]; Frey and Stutzer [40]-[43]; Diener and Seligman [44]; Diener et al. [45]; Hutchinson et al. [21]; and Easterlin [46],[47] have used happiness, life satisfaction and self-rated health status [20,48]. Those measures are subjective indexes which the scholars opined to assess health more than the negative or narrow objective indexes. In keeping with the limitation of objective indexes, the WHO [49] devised an approach to discount life expectancy by removing time spent in illness to produce what is termed 'healthy life expectancy' (or disability adjusted life expectancy). Disability Adjusted Life Expectancy (DALE) summarizes the expected number of years to be lived in what might be termed the equivalent of "full health" [49]. This approach resulted in Jamaicans losing 9 years of life owing to disabilities. The healthy life expectancy provides yet another account for the health status of males; but there is a fundamental weakness that has not been addressed. Healthy life expectancy therefore lacks the extensive coverage of an individual's health; but accompanying the subjective indexes, are biases and validity issues.

There are empirical evidences to show that self-reported health is an indicator of general health.

Schwarz and Strack [50] opined that the person's judgments are prone to systematic and non-systematic biases. However, Diener [37] argued that the subjective index seemed to contain substantial amounts of valid variance, suggesting that subjective measures provided some validity in assessing health; this was concurred by Smith [51] with good construct validity and is a respectably powerful predictor of mortality risks [52], disability [53] and morbidity [54], though these properties vary somewhat with national or cultural contexts [52]. Studies using self-reported health and mortality found a significant relationship between a subjective and an objective measure [52],[54]; life expectancy [55]; and disability [53]. Bourne [55] found that the correlation between life expectancy and self-reported health status was a strong one ( $r = 0.731$ ); and that self-rated health accounted for 53% of the variance in life expectancy. Hence, the issue of the validity of subjective and objective indexes is good, with Smith [51] opining that the construct validity between the two was a good one.

By using subjective indexes to measure health, studies have shown that there are many predictors (or variables) of these measures. Income, marital status, education and other sociodemographical variables [12]-[18], [20],[21],[40],[46]-[48],[ 56] have been found to significantly correlate with the health status. These studies have not singled out males in the examination of health issues, thus suggesting that the experiences of males and females are congruent or similar. WHO [57] forwarded that there is a disparity between contracting many diseases and the gender constitution of an individual. Rice [58], 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' [58]. Health disparity between the sexes being caused by particular issues with a nation, it is for this reason why health research must examine the sexes differently in order to understand each subgroup.

The current study fills this gap in the health literature by examining the health of males in Jamaica. The objectives of this study are 1) to

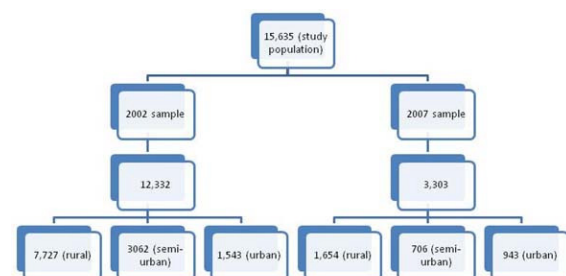
provide a detailed epidemiological profile of health conditions; 2) to indicate the changing pattern of health conditions; 3) to calculate the mean age of having reported illness or not; 4) to compute the mean age of particular health conditions; 5) to state whether the mean age of a having particular illness is changing; 6) to determine whether there is a significant statistical correlation between the health status and self-reported illness; 7) to identify factors that correlate with the health status; and 8) to ascertain the magnitude of each determinant of the health status.

## Methods and material

### *Setting and design*

The current study used secondary cross-sectional data taken from two nationally representative surveys. A subsample of 12,332 males out of 25,018 respondents and 3,303 males from 6,783 respondents were extracted from the surveys of the years 2002 and 2007 respectively [Table/Fig 1].

[Table/Fig 1]: Sample Composition of Study Population



The only criterion upon which the subsample was selected was based on being male. The survey (Jamaica Survey of Living Conditions, JSLC) is a modification of the World Bank Survey on Living Conditions [59]-[61] (PIOJ & STATIN, 1988-2008; World Bank, 2002). The JSLC began collecting data in 1989 and each year, a new module was included, based on particular sociopolitical issues, with the economy leading up to the survey period. A self-administered questionnaire was used to collect the data from Jamaicans. Trained data collectors were used to gather the data; and these

individuals were trained by the Statistical Institute of Jamaica.

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 a minimum of 100 residences in rural areas and 150 in urban areas. An ED is an independent geographical 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 dwellings was compiled, which in turn provided the sampling frame for the labour force. One third of the Labour Force Survey (i.e. LFS) was selected for the JSLC. The sample was weighted to reflect the population of the nation. The non-response rate for the survey for 2007 was 26.2% and 27.7% [59]-[61].

### **Measurement**

An explanation of some of the variables in the model is provided here. Self-reported illness status was a dummy variable, where 1 - reporting an ailment or dysfunction or illness in the last 4 weeks, which was the survey period; 0 - if there were no self-reported ailments, injuries or illnesses [17], [18], [62]. While self-reported ill-health is not an ideal indicator of actual health conditions because people may underreport, it is still an accurate proxy of ill-health and mortality [52], [53]. Health status is a binary measure where 1=good to excellent health; 0= otherwise, which is determined from the question, "Generally, how do you feel about your health"? Answers for this question are in a Likert scale matter, ranging from excellent to poor. Age group was classified as children (ages less than 15 years); young adults (ages 15 through 30 years); other aged adults (ages 30 through 59 years); young-old (ages 60 through 74 years); old-old (ages 75 through 84 years) and oldest-old (ages 85+ years). Medical care-seeking behaviour was taken from the question, 'Was a health care practitioner, header, or pharmacist

visited in the last 4 weeks?', there being two options to choose, Yes or No. Medical care-seeking behaviour therefore was coded as a binary measure where 1=Yes and 0= otherwise.

### **Statistical analysis used**

Descriptive statistics such as mean, standard deviation (SD), frequency and percentage were used to analyze the socio-demographical characteristics of the sample. Chi-square analyses were used to examine the association between the non-metric variables; t-test was used for the metric and the dichotomous variables and *F statistic* was utilized for the metric and the non-dichotomous variables. Logistic regressions analyse the relationship between 1) poor self-reported illness and some socio-demographical variables (for 2002); as well as 2) not reported an illness and some socio-demographical, economic variables and health status (for 2007). The Statistical Package for the Social Sciences (SPSS) for Windows, Version 16.0 was used for the analysis. Ninety-five percent confidence interval was used for the analysis and the final models (ie equations) were based on those variables in which  $P < 0.05$ . The Odds Ratio (OR) was interpreted for each significant variable. Initially, the enter approach was used in logistic regression, followed by a stepwise approach to ascertain the contribution of each significant variable for the final models.

In order to exclude multicollinearity between particular independent variables, correlation matrix was examined in order to ascertain if autocorrelation (or multicollinearity) existed between the variables. Based on Bryman and Cramer's findings [63], it was suggested that 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. Moderately to highly correlated variables were excluded from the model. Another exclusion criterion that was used was 30% of the missing cases.

### **Results**

**Demographic characteristic of the sample**

[Table/Fig 2] revealed a shift in the percent of divorced (+ 0.8%); widowed (+ 0.7%); separated (-0.4%); never married (+1.7%) and married males (-1.4%) between the years 2002 and 2007.

[Table/Fig 2]. Sociodemographic characteristics of sample, 2002 and 2007

Variable	2002		2007	
	n	%	n	%
<b>Marital status</b>				
Married	2007	25.7	522	24.3
Never married	5421	69.4	1528	71.1
Divorced	64	0.8	34	1.6
Separated	85	1.1	16	0.7
Widowed	234	3.0	30	2.3
<b>Self-reported illness</b>				
Yes	1217	10.2	388	12.1
No	10699	89.8	2820	87.9
<b>Self-reported diagnosed illness</b>				
Cold	-	-	69	17.2
Diarrhoea	5	5.7	11	2.7
Arthra	6	6.8	47	11.7
Diabetes mellitus	3	3.4	31	7.7
Hypertension	39	44.3	38	14.4
Arthritis	16	18.2	24	6.0
Other	19	21.6	102	25.4
Not diagnosed	-	-	60	14.9
<b>Income quintile</b>				
Poorest 20%	2454	19.9	671	20.3
Poor	2345	19.0	640	19.4
Middle	2440	19.8	636	19.3
Wealthy	2482	20.1	667	20.2
Wealthiest 20%	2611	21.2	689	20.9
<b>Health care-seeking behaviour</b>				
Yes	769	60.7	253	62.3
No	497	39.3	133	37.7
<b>Health insurance coverage</b>				
Yes	1251	10.5	612	19.3
No	10699	89.5	2560	80.7
<b>Area of residence</b>				
Rural	7727	62.7	1654	50.1
Semi-urban	3062	24.8	706	21.4
Urban	1343	12.5	943	28.5
<b>Income Median (Range)</b>	Ja \$251,795.96 (Ja. \$6,423,253.16-72)		Ja \$545,950.17 (Ja. \$5,228,700.28)	
<b>Age Mean ±SD</b>	28.28 ± 21.7 years		29.11 ± 21.6 years	
<b>Consumption Median (Range)</b>	Ja \$55,508.45 (Ja. \$1,992,283.72)		Ja \$123,697.30 (Ja. \$1,621,147.12)	
<b>Duration of illness Median (Range)</b>	10.5 days (90 days)		7.1 days (15 days)	
<b>Cost of medical care</b>				
Public Median (Range)	Ja \$150.00 (Ja. \$12,000)		Ja \$294.96 (Ja. \$20,000)	
Private Median (Range)	Ja \$800.00 (Ja. \$29,000)		Ja \$1130.39 (Ja. \$13,000)	

In 2002, US \$1.00 = Ja. \$50.87  
In 2007, US \$1.00 = Ja. \$80.47

There was also a percentage shift in the samples which were reported to have had an illness in the 4-week period of the survey. Concomitantly, there was a decline in the percentage of the sample, with hypertensive and arthritic cases in the chronic illness category, with an increase in diabetic cases. In 2007, 62.3% of the males sought medical care as compared to 60.7% in 2002. The increase was not limited to medical care-seeking behaviour, as the percentage of males with health insurance coverage increased by 10.5% to 19.3%. Massive urbanization was found to occur in the male population, as in 2002, 62.7% of the males dwelt in rural zones and this percentage declined to 50.1% in 2007, with 16% more males residing in urban zones and a 3.4% decline in semi-urban males. In the period from (2002-2007), consumption and

income increased by 2.24 and 2.17 times respectively.

**Health statistics**

In 2007, it was the first time in the 2 decade history during the data collection on Jamaicans, that health status was obtained. The findings revealed that 39.0% of the samples indicated very good health status; 46.4% indicated good health; 10.4%, fair health and 4.3% poor-to-poorest health, with 0.8% indicating very poor health status.

A cross tabulation between health status and self-rated illness revealed a significant statistical correlation -  $\chi^2$  (df = 4) = 602.354,  $P < 0.001$ , with the association being a weak one, correlation coefficient = 0.399. Twenty-one percent of the samples indicated having had an illness that reported poor-to-poorest health status as compared to 1.9% of the samples which revealed no illness recording poor-to-poorest health status [Table/Fig 3]. 3.3 times more of the respondents who indicated not having an illness, had very good health status as compared to those who indicated having an illness.

[Table/Fig 3]. Health status and self-rated illness

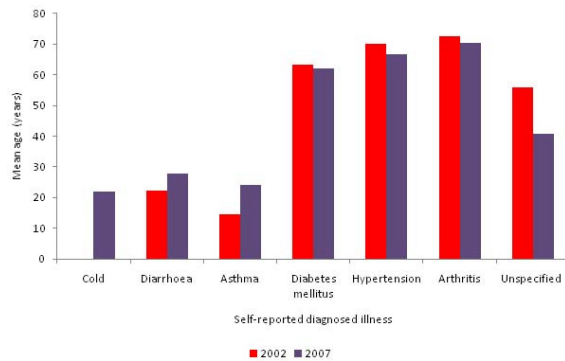
Health status	Self-rated illness	
	Yes	No
Very good	50 (13.0)	1193 (42.6)
Good	129 (33.4)	1351 (48.2)
Fair	125 (32.4)	205 (7.3)
Poor	66 (17.1)	44 (1.6)
Very poor	16 (4.1)	8 (0.3)
<b>Total</b>	<b>386</b>	<b>2801</b>

$\chi^2$  (df = 4) = 602.354,  $P < 0.001$

In 2002, the mean age of a male who reported an illness was 39.32 ± 28.97 years as compared to 27.26 ± 20.45 years – t-test = 18.563,  $P < 0.001$ . In 2007, the mean age of those with illness marginally increased to 40.64 ± 29.44 years as compared to 27.61 ± 19.80 years for those who did not have an illness - t-test = 11.355,  $P < 0.001$ .

Based on [Table/Fig 4], the mean age of males with a particular chronic illness has declined over the period. Interestingly, the greatest percentage decline was observed in unspecified health conditions.

[Table/Fig 4]. Mean age for males with particular self-reported diagnosed illness



In 2002, the mean age for males with unspecified health conditions was  $55.79 \pm 28.81$  years and this fell to  $40.67 \pm 27.01$  years in 2007. In 2007, the mean age for males with diabetes mellitus was  $61.94 \pm 12.01$  years; it was  $66.76 \pm 15.95$  years for those with hypertension and  $70.29 \pm 10.85$  years for those with arthritis. Further examination revealed that there was a statistical difference between the mean of those with chronic illness ( $P > 0.001$ ); but this existed between the chronic and the acute illnesses as well as the unspecified health conditions: for 2002 –  $F$  statistic = 15.62,  $P < 0.001$  and for 2007 –  $F$  statistic = 31.601,  $P < 0.001$ .

### Multivariate analysis

#### Predictors of poor self-reported illness by some explanatory variables

In 2002, the current poor health status of males in Jamaica was found to be significantly correlated with age; area of residence; consumption, social support and marital status ( $\chi^2 = 545.320$ ,  $P < 0.001$ -2 Log likelihood = 4277.79) [Table/Fig 5]. [Table/Fig 6] revealed that the predictors of poor self-reported illnesses of males in Jamaica for 2002 were age (OR = 1.044; 95% CI = 1.038, 1.049;  $P < 0.05$ ); urban area (OR = 1.547, 95% CI = 1.172, 2.043;  $P < 0.05$ ); and consumption (OR = 1.183; 95% CI = 1.056, 1.327;  $P < 0.05$ ). Further analysis showed that age was the most significant predictor of poor health status, accounting for 14.3% of the model (ie 15.1%); with area of residence accounting for 0.2% [Table/Fig 7].

[Table/Fig 5]. Predictors of poor self-reported illness by some explanatory variables, 2002

Variable	Std error	Wald statistic	P	Odds ratio	CI (95%)	
Age	0.01	222.66	0.000	1.04	1.04	1.05
Urban areas	0.14	9.47	0.002	1.55	1.17	2.04
Other towns	0.16	1.31	0.252	1.20	0.88	1.62
†Rural areas				1.00		
Log Consumption	0.06	8.34	0.004	1.18	1.06	1.33
Separated_Div_Wid	0.15	4.77	0.029	1.38	1.03	1.85
Married	0.10	1.39	0.239	1.12	0.93	1.36
†Never married				1.00		
Physical environment	0.09	0.89	0.347	1.08	0.92	1.28
Secondary	0.10	0.02	0.895	1.01	0.83	1.23
Tertiary	0.21	0.09	0.768	1.06	0.70	1.61
†Primary or below				1.00		
Rented – house tenure	0.17	0.02	0.895	0.98	0.70	1.37
Owned	0.12	0.03	0.876	1.02	0.80	1.30
†Squatted				1.00		
Social support	0.08	6.23	0.013	1.23	1.05	1.44
Constant	0.66	92.87	0.000	0.00		

$\chi^2 = 545.320$ ,  $P < 0.001$

-2 Log likelihood = 4277.79

Hosmer and Lemeshow goodness of fit  $\chi^2=4.324$ ,  $P = 0.827$

Nagelkerke  $R^2=0.151$

Overall correct classification = 88.9%

Correct classification of cases of poor self-rated health = 99.8%

Correct classification of cases of good self-rated health = 1.8%

†Reference group

[Table/Fig 6]. Predictors of not self-reporting an illness by some explanatory variables, 2007

Variable	Std error	Wald statistic	P	Odds ratio	CI (95%)	
Good health status	0.26	125.72	0.000	17.80	10.76	29.45
Fair health status	0.25	11.93	0.001	2.40	1.46	3.95
†Poor health status				1.00		
Age	0.01	39.85	0.000	0.97	0.96	0.98
Middle Class	0.26	0.01	0.918	1.03	0.62	1.70
Upper class	0.36	0.34	0.558	1.24	0.61	2.53
†Lower class				1.00		
Married	0.19	0.71	0.399	0.85	0.58	1.24
Divorced, separated or other	0.31	0.01	0.954	1.02	0.55	1.88
†Never married				1.00		
Health insurance	0.20	0.02	0.899	0.98	0.67	1.43
Urban area	0.20	5.22	0.022	1.38	1.07	2.34
Other towns	0.22	2.86	0.091	1.44	0.94	2.20
†Rural areas				1.00		
Log Consumption	0.23	6.84	0.009	0.55	0.35	0.86
Constant	2.60	10.30	0.001	4158.20		

$\chi^2 = 463.61$ ,  $P < 0.001$

-2 Log likelihood = 1103.314

Hosmer and Lemeshow goodness of fit  $\chi^2=4.272$ ,  $P = 0.832$ ;

Nagelkerke  $R^2=0.376$

Overall correct classification = 88.9%

Correct classification of cases of poor self-rated health = 99.8%

Correct classification of cases of good self-rated health = 1.8%

†Reference group

[Table/Fig 7]. Model summary of logistic regression analyses, 2002 and 2007



Model(2002)	Nagelkerke R Square
Age	0.143
Age+urban area	0.145
Age+urban area+consumption	0.148
Age+urban area+consumption+social support	0.149
Age+urban area+consumption+social support+ marital status	0.151
<b>Model(for 2007)</b>	
<b>Nagelkerke R Square</b>	
Good health	0.300
Good health+age	0.354
Good health+Age+fair health	0.362
Good health+Age+fair health+consumption	0.371
Good health+Age+fair health+consumption+urban area	0.376

In 2007, the current poor health status of males in Jamaica was found to be significantly associated with health status; age of the respondents; consumption, and area of residence - ( $\chi^2 = 463.61$ ,  $P < 0.001$ ; -2 Log likelihood = 1103.314) [Table/Fig 6]. Based on [Table/Fig 6], it was revealed that the predictors of poor self-reported illnesses of males in Jamaica for 2002 were age (OR = 1.044; 95% CI = 1.038, 1.049;  $P < 0.05$ ); urban area (OR = 1.547, 95% CI = 1.172, 2.043;  $P < 0.05$ ); and consumption (OR = 1.183; 95% CI = 1.056, 1.327;  $P < 0.05$ ). The findings here show that for each year that a male ages, he is 1.04 times more likely to report an illness; and that urban males are 1.6 times more likely to report an illness with reference to rural males. Further analysis showed that age was the most significant predictor of poor health status, accounting for 14.3% of the model (ie 15.1%); with area of residence accounting for 0.2% [Table/Fig 7].

Based on [Table/Fig 6], non self-reported illnesses of males in Jamaica for 2007 can be predicted by good health status (OR = 17.801; 95% CI = 10.761, 29.446;  $P < 0.05$ ); fair health status (OR = 2.403; 95% CI = 1.461, 3.951;  $P < 0.05$ ); age (OR = 0.967; 95% CI = 0.957, 0.977;  $P < 0.05$ ); urban area (OR = 1.579, 95% CI = 1.067, 2.336;  $P < 0.05$ ); and consumption (OR = 0.551; 95% CI = 0.352, 0.861;  $P < 0.05$ ). On disaggregating the explanatory power, it was revealed that good health status accounted for 30% (out of 37.6%) of the why males do not report an illness; age accounted for 5.4%; fair health accounted for 0.8%; consumption, 0.9% and area of residence, 0.5% [Table/Fig 7]. Concomitantly, [Table/Fig 6] revealed that a male who reported good health status with reference to one who indicated poor health status was 17.8 times more likely to not report an illness; and that the more a male spent in

consumption expenditure, he is 0.449 times less likely to not report an illness.

## Discussion

The current study revealed that men were willing to state their general health status (using response rate, 97%); but that they were unwilling to report the typologies of the illnesses that they were diagnosed with (response rate, 0.7% in 2002 and 12.2% in 2007). The income of males increased by at least 2 times in 2007 over 2002; however, health care-seeking behaviour increased by only 1.6%. Embedded in this finding is the reluctance of males to seek medical care and this again can be seen in the 8.8% increase in health insurance coverage in 2007 over 2002. 7% was due to public health insurance although this is fee. The number of diabetic cases in 2007 increased by 2.3 times over 2002 and there was a decline in the mean age at which males reported illness. The mean age at which a male who had self-reported being diagnosed with: diabetes fell to 61.94 years; hypertension fell to 66.8 years; arthritis fell to 70.3 years and unspecified health conditions fell to 40.7 years from 55.8 years. Hence, why the reluctance to seek medical care with the aforementioned context?

Chevannes [1] provided some explanation for men's general behaviour by using the social learning theory. He forwarded the perspective that a young male imitates the roles of society members through role modeling as to what constituted acceptable and good roles [1]. Young males are grown to be strong, masculine and brave and fewer traits must shun the appearance of weakness and its associated attributes. The male child therefore, as a part of his socialization, has to accept that the illness is correlated with weakness and that he must not be willing participate in health care seeking behaviour unless it is unavoidable. This definition of the unavoidable is embedded into severity, being unable to rectify the complaint outside of health care practitioners. This gender role of the sexes is not limited to Jamaica or the Caribbean, but a study carried out by Ali and de Muynck [64] on street children in Pakistan,

found a similar gender stereotype. A descriptive cross-sectional study carried out during September and October 2000, of 40 school-aged street children (8-14 years), revealed the severity of illnesses and that it was when ill-health threatened financial opportunities that males sought medical care. Another finding was that [65]. Chevannes noted that males suppressed response a pain, accounting for a low turn out to health care facilities and justifies a higher mortality rates as on attend medical care facilities it is often too later and death is probable outcome.

Hence, the lowered age with which with particular chronic illness (such as diabetes mellitus, hypertension and arthritis) are diagnosed, does not change this embedded culturalization which began prior to formal schooling and justifies why higher education does not often change this practice. Understanding the psyche of men and how this is fashioned, aids in the comprehension of their reluctance to visit health care facilities. The current findings indicated that urbanization had taken place with males in Jamaica. The migration to urban zones was primarily to facilitate economic opportunities which accounted for the drastic increase in income. Ali and de Muynck's [64] study provided some understanding for the marginal increase in the health care seeking behaviour in Jamaica, as this figure is accounted for males who were ill to the point of being unable to work and that the ill-health threatens their economic livelihood.

Another explanation for the withdrawal of males from visits to health care facilities was due to the gender composition of those facilities. Males are culturalized to be strong, to provide for their families and chief among these, was to show females their masculinities which were tied to strength, physique and financial ability. It follows that with the higher percentage of health care workers being females, this retarded the masculinity of the males as they conceptualized that the visits to these institutions were a show of their weakness. To protect their masculinity, males would go to any extent to maintain their image, which included sacrificing their life. This was embedded in the health reported

figures for the sexes. In 2002, 14.6% of the females reported an illness as compared to 10.2% for males and in 2004, the disparity widened, as the figures were 13.6% for females and 8.9% for males [26].

The current work showed the contribution of health status in explaining the illnesses (or non-illnesses) of males. Current health status therefore accounted for 79.8% (30% out of 37.6%) of the variability in current illness (or lack of), which was lower than that found in Hambleton et al.'s work. Hambleton et al. found that 87.5% (ie 33.5% out of 38.3%) of the current illnesses accounted for the current health status of elderly Barbadians. Embedded in the findings of this research and in that of Hambleton et al.'s studies was the synonymous conceptualization of illness and the self-rated health status in two Caribbean societies. This work held some comparability with Hambleton et al.'s study with respect to explanatory power and contribution of illness to the health status. Hambleton et al.'s research not only validated the current study and vice versa, but this work demonstrated the importance of illness to health and how despite the works of Engel and the WHO, the health of males in contemporary Jamaica is still substantially conceptualized as illness. It is this definition of health that guided risk perception, health care utilization and the demand for healthy lifestyle measures. Simply put, a male who was not experiencing symptoms of illness (pain, etcetera) did not construe that he needed to practice healthy lifestyle choices such as exercise, healthy eating, periodical visits to a doctor, have sufficient sleep and refrain from bad lifestyle choices such as smoking and consuming alcoholic beverages. Outside of the definitions of health status, the factors which accounted for self-reported illness or health status may not be necessarily the same across different cohorts.

Many empirical studies have established the strong correlation between marital status and health status. This work found that there was no significant difference between the health status of married males and males who were never married; but that divorced, separated and widowed males were 1.4 times more likely to report an illness. A part of this rationale for the

higher probability of increased illness is owing to 1) the loss due to separation which may be via death or physical separation, 2) the psychological tenet in investment and its loss from parting; and, 3) the financial separation costs which are likely to account for depression, suicide and other forms of illnesses. A study by Able et al. [66] found that the rate of suicides in male Jamaicans was 9 times higher than that for females, and they opined that a part of this owed to the suppressed feeling of this sex. Although divorce, separation or widowhood had a psychosocial influence on males, being married did not provide a benefit of better health.

Empirical evidence now exists that provides pertinent findings on the determinants of the self-reported illness and self-rated health status of Jamaican males, disparities between both and the role of illness in health status. These findings demonstrated not only the great health status experienced by the Jamaican males, but also the increased life expectancy which was accounted for by better sanitation, quality and food quality, and other contributions of public health over the decades. Statistics supported the exponential increase in the life expectancy of the Jamaican male from 37.02 years (1880-1882) to 71.26 years (2002-2004) (Table 6) [27], [27], [67], [68], thus indicating improvements in healthy life expectancy. Despite the living longer status in 2002 over 1880-1882, only 12 out of every 100 reported suffering from an illness in the surveyed period. The reality exists that there is a diabetes epidemic occurring among males in the country.

This research revealed that diabetes mellitus increased by over 933% in 2007 over 2002, thus demonstrating that the average increase per year was 156%. Such an epidemic was hidden in the low self-reported illness (2002, 10.2%; 2007, 12.1%), high life expectancy [Table/Fig 8], and self-rated health status by the study population.

**[Table/Fig 8]: Expectation of Life at Birth by Sex, 1880-1991, Jamaicans**

Period	Average Expected Years of Life at Birth	
	Male	Female
	$e^0$	$e^0$
1880-1882	37.02	39.80
1890-1892	36.74	38.30
1910-1912	39.04	41.41
1920-1922	35.89	38.20
1945-1947	51.25	54.38
1950-1952	55.73	58.89
1959-1961	62.65	66.63
1969-1970	66.70	70.20
1979-1981	69.03	72.37
1989-1991	69.97	72.64
1999-2001	70.94	75.38
2002-2004	71.26	77.07

Sources: Demographic Statistics (1972-2007) [27, 28, 67]; Statistical Yearbook of Jamaica, 1999 [68].  $e^0$  is at birth

The challenge of public health especially, is to address this new health epidemic and the reduced age at which males report particular chronic illnesses (hypertension, arthritis and diabetes mellitus). Embedded in these findings is the living longer status, with certain health conditions. These are implicit implications of those results for public health policy formulation, budgetary expenditure on healthcare, lower healthy life expectancy, lower production and productivity, as the individual will require some time for healthcare utilization and absence from school and work. Clearly, the brewing diabetes mellitus epidemic among males has been undiscovered by researchers and policy makers for years because of the low report of illnesses, particularly diabetes mellitus.

The 20<sup>th</sup> century brought with it massive changes in the typologies of diseases and the shift in mortality from infectious diseases such as tuberculosis, pneumonia, yellow fever, Black Death (i.e. Bubonic Plague), smallpox and 'diphtheria', to diseases such as cancers, heart illnesses, hypertension and diabetes mellitus. Although diseases have shifted from infectious to degenerate, chronic non-communicable illnesses have arisen and are still lingering within all the advances in science, medicine and technology. The Jamaican males are experiencing massive increases in diabetes mellitus since 2002. By using the absolute percentages of diabetic males in Jamaica, it appears that this health condition is low and does not need examination due to the deceptive nature of this epidemic. Morrison, in [24] an article entitled 'Diabetes and hypertension: Twin

Trouble' established that diabetes mellitus and hypertension have now become two problems for Jamaicans and in the wider Caribbean. This situation was equally collaborated by Callender [22] at the 6<sup>th</sup> International Diabetes and Hypertension Conference, which was held in Jamaica in March 2000. She found that there was a positive association between diabetic and hypertensive patients - 50% of the individuals with diabetes had a history of hypertension [22]. Based on the findings of the current study and the works of Morrison [24] and Callender [22], it is not a problem but an epidemic that is experienced by males in Jamaica. The challenge for public health specialists therefore, is to implement an immediate surveillance of this chronic illness among males and to formulate effective strategies to reduce, combat and address not only the current health problems, but lifestyle changes which are required for the present generation.

## Conclusion

The current study provides a comprehensive examination of the health of males in Jamaica, which can be used by public health and other policy-makers to formulate an intervention for this cohort. Interestingly, in this work, the mean age of males who reported being diagnosed with unspecified health conditions has declined by 27 years; but we are not cognizant of what constitutes this category of illness. With the average age of contracting this health condition being 40.7 years, could this group hold some answers to the high mortality of Jamaican males? Another issue which must be further examined is the exponential increase in diabetes mellitus among the sample (over 933%), thus indicating that there is a diabetes mellitus epidemic which is affecting males. Outside of the diabetes epidemic that is faced by Jamaican males, there is the fact that the average age of males with particular chronic conditions such as diabetes mellitus, hypertension and arthritis has fallen over the studied period, demonstrating that those conditions are affecting young males and that this cannot be left unaddressed.

In summary, interesting, despite the broadened definition offered by the WHO on health, in contemporary Jamaica, self-rated health is still

fundamentally conceptualized as self-reported illness. Such a conceptual perspective indicates not only their cognitive domain of health, but it also provides insights into healthcare utilization, health behaviour and other risk behaviours that the Jamaican males will be engaged in.

## Conflict of interest

The author has no conflict of interest to report.

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