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Gender, Women and Health: Gendered health differences

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ABSTRACT

Introduction: There is a paucity of information on health (including health status and illness) from a gendered perspective. In 2007, life expectancy for Jamaican females was 74 years which is 5 years greater than that for males; poverty was greater among females than males and the presence of illness was greater for females than males.

Objectives: The current work seeks to 1) examine health disparities between the genders, 2) assess the typologies of illnesses based on the sexes, 3) determine factors that account for self-reported illness based on the sexes, 4) evaluate explanatory factors of health status, with a gendered focus, 5) gendered health care utilization, and 6) assess whether social determinants of different definitions of health remained the same over different time periods, and based on differences in genders.

Method: This is secondary data analysis using national cross-sectional probability surveys (Jamaica Survey of Living Conditions, 2002 and 2007). The samples were 31,801 respondents. Stepwise logistic regressions were utilized to establish explanatory factors of self-reported illness and self-rated health.

Results: Females were 1.7 times more likely to report a chronic illness compared to males. They too, were about two times more likely to report hypertension than males, and diabetes had a female face. Arthritis is a male illness. Health care utilization increased for the population (2002 over 2007); but reduced among the poorest 20%, particularly greater among the males than that for the females.

Conclusion: The health disparities between the genders require policies in keeping with the gendered health inequalities.

Keywords: Gendered health, self-reported illness, self-rated health, health inequality, health disparity, health discourse, determinants of health

Introduction

In 2009, the Statistical Institute of Jamaica (STATIN) estimated that the end of year population for the nation was 2, 698,810 people, with a sex ratio of 97 males to every 100 females [1]. It can be deduced from the sex ratio that life expectancy at birth is greater for females and males, greater mortality among males than females and this is concurring with empirical data on the matter [1-3]. The ageing population in Jamaica is a feminized phenomenon, and population ageing has implication for chronic diseases, health care management and health care utilization [3]. It is insufficient to use life expectancy (including healthy life expectancy), sex ratio, and mortality to assess the health status of Jamaicans or any other nationality, and use the same information to declare the better health status enjoyed by particular gender.

Empirical evidence revealed that in Jamaica, poverty is greater among females than males as well as rural than for urban residents, unemployment is a feminized phenomenon, wealth is skewed in the hands of the upper class than the working class [4, 5]; yet life expectancy is greater among females than that of males [5]. Jamaica is not atypical in the socioeconomic differences among its people; and these account for inequalities in health outcomes [6-8]. The World Health Organization (WHO) [9] has found that 4 out of every 5 people with chronic illnesses were in developing countries and that 3 out of every 5 global mortalities are caused by chronic illness. This implies that there is an association between poverty and chronic illness, and social deprivation and mortality. Studies by Van and colleagues [10], Bourne [11], Marmot [12], and Sen [13] have shown that statistical relationship between poverty and chronic illness, poverty and social deprivation, poverty and poor health,

unemployment and poverty, and poverty and less health care utilization.

Life expectancy cannot be used as the sole indicator of health status, without the recognition of disability free years and other socioeconomic parameters. The relationship between poverty and ill-health is a long established fact [14], which continues in contemporary societies. Alleyne [14] aptly records that poverty ‘adversely affects the individual’s capacity’ and makes it increasingly difficult for him/her to maintain his/her health. Poverty extends beyond health disparities to socioeconomic inequalities, which is a wide range of social pathologies. This is in keeping with Amartya Sen’s conceptualization of poverty that is associated with capabilities, and makes it difficult for people to capitalize on the advantages of economic opportunities. Within the context of income inequity and health inequalities in Latin America and the Caribbean [15,16], little if any evidence is placed on gendered health in the health discourse.

There are some realities in Colombia which are equally the same across the Latin America and the Caribbean. According to Ribero and Nunez [17] “At the descriptive level, illness is more frequent for women than for men, for less educated than for more educated persons, for rural than for urban residents, and for older individuals.” In 2007, statistics revealed that life expectancy in Colombia was greater for females (79 years) than for males (72 years) [2]; yet there were clear differences between the genders in regard health outcome, more illnesses among the less educated than for the more educated, more reported cases of illness among rural than for urban residents, and the greater burden of disease falls on the poor [17]. In 2007, life expectancy for Jamaican females was 74 years which is 5 years greater than that for males; poverty was greater among females than males and the presence of illness was greater among females than males

[2, 5]. There is undoubtedly no denial that there are gendered differences in health outcome. And with illness having the influence to reduce a household into poverty because of out of pocket medical expenditure [18], females because of their lower economic status, the less educated, poor, aged and rural residents are vulnerable to more illnesses.

From a national cross-sectional probability sample survey of 2,848 Jamaicans aged 15-74 years old, Wilks and colleagues [19] found that males reported greater 'very good or excellent health status' (40.5%) compared to females (30.4%); and that hypertension and diabetes were feminized chronic illnesses and that high cholesterol was predominant a male phenomenon (males, 13.8%; females, 9.9%). Plethora of studies have been conducted on different areas of health (illness, life satisfaction, and health status) as well as health care utilization of people and gender was treated as another independent variable [5-21] or a particular gender was the focus of the study as in Bourne and Rhule [22]; however, none have approach the health discourse from a gendered perspective. Meaning that a single study has not been conducted on 1) illness, 2) typology of illness, 3) self-rated health status, 4) health care utilization, 5) types of health care services used, 6) factors that explain self-reported illness, and 7) social determinants of self-rated health status from a gendered perspective. A piecemeal approach has been used for years to examine health in Latin America and the Caribbean; but this research will comprehensively evaluate health with a gendered focus.

Using two nationally representative probability cross-sectional surveys' dataset for Jamaica [5], the current work seeks to 1) examine health disparities between the genders, 2) assess the typologies of illnesses based on the sexes, 3) determine factors that account for self-reported illness based on the

sexes, 4) evaluate explanatory factors of health status, with a gendered focus, 5) explain gendered health care utilization, and 6) assess whether social determinants of different definitions of health remained the same over different time periods, and based on differences in genders. This work is embedded in an econometric framework developed by Michael Grossman [20] in the 1970s, and later modified by Smith and Kington [21] in the late 1990s.

Theoretical and Empirical Framework

In 1972, Michael Grossman [20] established a theoretical and empirical framework that was used to determine many independent factors simultaneously influencing a single dependent variable, self-rated health. Grossman's work was later modified by Smith and Kington [21] in 1997. Grossman's work posited that health status is a function of particular determinants and these are given in Equation [1]:

$$H_t = f(H_{t-1}, G_o, B_t, MC_t, ED) \dots \dots \dots [1]$$

In which the H_t - current health in time period t , stock of health (H_{t-1}) in previous period, B_t - smoking and excessive drinking, and good personal health behaviours (including exercise - G_o), MC_t - use of medical care, education of each family member (ED), and all sources of household income (including current income). Grossman's model was later expanded upon by Smith and Kington [21] to include other socioeconomic variables (Equation [2]).

$$H_t = H^* (H_{t-1}, P_{mc}, P_o, ED, E_t, R_t, A_t, G_o) \dots [2]$$

Eq. (2) expresses current health status H_t as a function of stock of health (H_{t-1}), price of medical care P_{mc} , the price of other inputs P_o , education of each family member (ED), all

sources of household income (E_t), family background or genetic endowments (G_o), retirement related income (R_t), asset income (A_t).

The current study seeks to determine the influence of many variables simultaneously on a single dependent variable, which is the justification for the use and modification of Smith and Kington's work [21]. The modification tested additional variables such as physical environment, psychological conditions, fertility, crowding, household head, duration of time unable to carry out normal activity, length of time living in household and social assistance. This study is secondary data analysis using data on Jamaicans to test variables that accounted for self-reported illness (Equation [3]). In keeping with the gendered focus of this study, we will test the variables influence on each gender (Equations [4] and [5]). As well as how particular variables will influence self-rated health status (Eqn [6]). All the variables that were tested in for this work are classified in Equations [3-6].

$$H_t = (P_{mc}, ED, Y, R_t, A_t, G_i, A_i, MR, AR, \ln CR, \sum PA, F, EN, \ln C) \dots \dots [3]$$

Eq. (3) expresses current self-reported illness (1=chronic illness and 0=acute illness) H_t as a function of price of medical care (P_{mc}), education of individual (ED), individual income (i.e. proxy by total expenditure on goods and services) (Y), gender of the individual (G_i), retirement related income (R_t), ownership of assets at the current period (A_t), age of the individual, (A_i), marital status, (MR); area of residence, (AR); logged Household crowding (proxy by average occupancy per room), ($\ln CR$); summed psychological conditions, ($\sum PA$) positive and negative psychological conditions; fertility (proxy by the number of children 14 years and older), (F); and the physical environment, (EN); logged of consumption, ($\ln C$).

Equations [4] and [5] assess the social determinants that explain self-reported chronic illness of males (Equation [4]) and females (Equation [5]):

$$H_{tm} = (P_{mc}, ED, Y, R_t, A_t, G_i, A_i, MR, AR, \ln CR, \sum PA, F, EN, \ln C) \dots \dots [4]$$

$$H_{tf} = (P_{mc}, ED, Y, R_t, A_t, G_i, A_i, MR, AR, \ln CR, \sum PA, F, EN, \ln C) \dots \dots [5]$$

$$H_t = f(A_i, G_i, HH_i, AR_i, I_t, J_i, \ln C, \ln D_i, ED_i, MR_i, S_i, HI_i, \ln Y, CR_i, MC_t, SA_i, T_i, P_{mc}, \varepsilon_i) \dots \dots [6]$$

where H_t (ie self-rated current health status in time t) is a function of age of respondents, A_i ; sex of individual i, G_i ; household head of individual i, HH_i ; area of residence, AR_i ; current self-reported illness of individual i, I_i ; injuries received in the last 4 weeks by individual i, J_i ; logged consumption per person per household member, $\ln C$; logged duration of time that individual i was unable to carry out normal activities, $\ln D_i$; Education level of individual i, ED_i ; marital status of person i, MR_i ; social class of person i, S_i ; health insurance coverage of person i, HI_i ; logged income, $\ln Y$; crowding of individual i, CR_i ; medical expenditure of individual i in time period t, MC_t ; social assistance of individual i, SA_i ; length of time living in current household by individual i, T_i ; price of medical care P_{mc} , and an error term (ie. residual error).

Method

This is a secondary data analysis using two separate Jamaica Surveys of Living Conditions (JSLC 2002 and 2007). The JSLC's samples are nationally representative cross-sectional descriptive surveys drawn using stratified random sampling. For 2002, the sample was 25, 018 respondents and 6,783

respondents for 2007 [23, 24]. We will describe the sampling frame used by the JSLC in order to provide a comprehensive understanding of the research design, and validity.

The JSLC's 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 [5]. The PSU is an Enumeration District (ED), which constituted 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 JSLC, the PSUs is a listing of all the dwellings and this was used as the sampling frame from which a Master Sample of dwelling was compiled [5]. According to the JSLC [5], the sample was weighted to reflect the population of the nation.

The JSLC used an administered questionnaire to collect the data which were stored and analyzed using SPSS for Windows (SPSS Inc; Chicago, IL, USA). The JSLC's questionnaire is modelled from the World Bank's Living Standards Measurement Study (LSMS) household survey [5]. There are some modifications to the LSMS, as JSLC is more focused on policy impacts. The JSLC's questionnaire covered areas such as socio-demographic, economic and health variables. JSLC for 2007 had a non-response rate 26.2%, and for 2002 it was 29.7% [23, 24]. The researchers chose these JSLC based on 1) the national probability representation 2) data on self-rated health status, presence of illness and 3) other health related information therein. Only some variables were used from the JSLC's data (see measures).

Statistics

Descriptive statistics, such as mean, standard deviation (SD), frequency and percentage were used to analyze the socio-demographic characteristics of the sample. Pearson's χ^2 -test was used to examine the association between non-metric variables. Independent sample t-test was used to test the relationships between metric and 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 1) (self-reported health status: 1 if reported good health status and 0 if poor health) and good self-rated health status (1=good and very good health status, 0 = otherwise), and 2) presence of illness (or not).

The results were presented using unstandardized B-coefficients, Odds ratio (OR) and confidence interval (95% CI). The predictive power of the model was tested using the Omnibus Test of Model to examine goodness of fit of the model. The correlation matrix was examined in order to ascertain if autocorrelation (or multicollinearity) existed between variables. A p-value of 0.05 was used to test the significance level. In multiple stepwise logistic regressions, non-significant variables were eliminated using the Wald statistic with entry and removal values of 0.05 (Tables 3-5). If the influence of a particular factor was significant by a pvalue < 5%, the odds ratio (OR) with a 95% confidence interval (CI) was calculated. The odds ratio (OR) is interpreted based on the statistical term 'odds' that is derived from 'odds ratio'. The Wald statistics were used to determine the magnitude (or contribution) of each statistically significant variable in comparison with the others.

Measure

The conceptual definitions of all the variables used in this study are placed in the Annex. The variables are 1) continuous (age, income), 2) dichotomous (health seeking behaviour, gender, etc) and 3) non-dichotomous variables (self-rated health status).

Results

Table 1 presents the demographic characteristics of the sampled respondents. Females were more likely to be educated at the tertiary level than males and less likely to experienced crimes than males.

Figure 1 presents information on income quintile by self-reported illness controlled for by gender of respondents for 2002 and 2007. It was revealed that there was no statistical association between self-reported illness and quintile among females for 2002 ($\chi^2 = 8.95$, $P = 0.062$) and 2007 ($\chi^2 = 2.25$, $P = 0.69$). However, among males, a statistical relationship emerged between self-reported illness and income quintile for 2002 ($\chi^2 = 12.01$, $P = 0.01$) and no statistical relation in 2007 ($\chi^2 = 6.07$, $P = 0.194$).

Figure 2 presents information on the income quintile by health care utilization controlled for gender of respondents, 2002 and 2007. Comparatively, generally people sought medical care in 2007 than in 2002 excess among the poorest 20%. Almost 21% less males in the poorest 20% sought medical care in 2007 over 2002 compared to females (5.4%). In addition, a significant statistical association was found between income quintile and health care utilization among males for both periods (2002 and 2007), $\chi^2 = 10.93$, $P = 0.027$ and $\chi^2 = 10.46$, $P = 0.033$ respectively. No relationship existed between

income quintile and health care utilization for females in both periods (2002 and 2007), $\chi^2 = 9.15$, $P = 0.057$ and $\chi^2 = 9.41$, $P = 0.052$ respectively.

Table 2 shows information on health conditions and health care utilization of Jamaicans by the genders and these are for 2002 and 2007. Health care utilization of respondents increased significantly for 2007 over 2002. Private health care utilization is more a male than female phenomenon; and this is reverse for public health care utilization. Furthermore, there is a statistical association between self-rated health status and gender of respondents ($\chi^2 = 46.47$, $P < 0.0001$). Males were more likely to report excellent health than females, females were more likely to indicate having poor health status than males and this was also the case in moderate health status (Table 2).

Table 3 presents information on the regression of particular social determinants that explain self-reported illness for 2002 and 2007. Based on Table 3, there are differences in the social determinants over the two periods (2002 and 2007). Despite the disparities, males reported less illness than for females in both time intervals. The disparity in self-reported illness that existed in 2002 between those who dwelled in urban and rural areas disappears in 2007.

Table 4 displays the regression that includes chronic illness as a dependent variable and the explanatory factors. The explanatory factors of dependent variable for the two periods were somewhat different. Only two factors (age and gender) were determinants in 2002 and 2007. With a change in the typology of factors, although the number of factors was the same in both years (3), the explanatory power changed remarkably when medical expenditure was not a factor in 2007. Age has a positive influence chronic illness as well as health care seeking behaviour. Females were

1.7 times more likely to report a chronic illness than males, and this was equally the same for the two periods (2002 and 2007).

Table 5 summarizes the factors that explain chronic illness among males and females. Importantly, married males were at least 1.02 times more likely to report a chronic illness than single males; and, marital status was not statistically significant variable among females. On the other hand, in 2007, females who sought medical care were 2.9 times more likely to report having a chronic illness; while this variable was not significant in 2002 or for males. The only factors that were consistent across the genders and periods as explaining chronic illness was age; and that females were more likely to report a chronic illness than for males.

Table 6 shows the main results of estimates of explanatory factors of self-rated good health status of Jamaicans. Age, health seeking behaviour and self-reported illness are negatively associated with good self-rated health status of respondents, with age being the most significant factor- Model $\chi^2 = 114.75, P < 0.0001$.

Table 7 highlights information on explanatory factors that accounting for self-rated good health status of males and females (in 2007). Although the same number of social determinants emerged in explaining self-rated good health status of females and males, the latter had a greater explanatory power. Expenditure accounted for greater good health status of females, but this was not the case among males. Age of respondents and health care seeking behaviour were social determinants of good health status that are constant across the genders, and these factors are negatively associated with self-rated good health. Self-reported illness was statistically significant variable among males and not among females. Males who reported having an

illness were 71% less likely to indicated good health status.

Discussion

The majority of studies that have been conducted on the social determinants of health have not had a gendered focus [26-29]. The empirical evidence continues to postulate by ignorance, the sameness of social determinants of health across the genders. The present work shows that social factors of health are somewhat the same across time interval and gender. There were some clear differences that emerged in the current study, which revealed that changing the definitions of health and disaggregating the data by gender highlighted some social inequalities and power explanation. Importantly, a critical finding that emerged from this work is self-reported illness on good of health status. The findings highlighted that those who reported an illness were 67% less likely to indicate having good health status, suggesting that good health and illness are on different degree on the health pendulum. On disaggregating self-rated health status, it was found that this was a male phenomenon. Embedded in this finding is the difficulty using illness to measure health status across the genders. Like illness for males, income plays a role in determining health status for females. This reinforced the negative influence of poverty on health status of females and this is not the case for male. Another finding of importance in this research is area of residence. Females who resided in rural area are less likely to rate their health as good in reference to those in urban areas. A pivotal finding is the negative association between health care seeking behaviour and good health status, indicating that health care utilization for the genders in Jamaica is curative and not preventative. The present work showed that chronic illness is

more a feminized phenomenon, and that this is 1.7 times greater in females than among males. Disaggregating the chronic illness highlighted that hypertension and diabetes were a feminized phenomenon, whereas arthritis was a male illness. And males were more likely to utilize private health care services than male and that the factors that account for reporting a chronic illness are not congruent between the genders.

The empirical evidences have long established the relation between poverty and illness, particularly chronic illness [9-13], but for this study, income (money), and social hierarchy were associated with self-reported chronic illness, and this was the same across the genders. According to Smith and Kington [21], money matters in health status which was also concurred with by Marmot [12]. It can be extrapolated from aforementioned perspective that less educated, rural residence, female, and poor would be less healthy, more ill and experience more chronic illnesses that those in the wealthy social hierarchy. To suggest that money can buy health would mean that all the previously mentioned issues should hold true in Jamaica; but, this is not necessarily the current realities. The present study found that while females reported more chronic illness, and poorer than males, they were educated at the tertiary level, seek more medical care and health proactive, and statistics indicated that on average they live 5 year longer than males [2], which denotes that the health outcome disparities are not explained by money. This begs the question; can you access medical care without money?

The current work found that those who spent more on medical expenses were more likely to report a chronic illness, but that this statistical factor disappears in 2007. Apart of the rationale for the disappearance of medical expenditure being a factor of chronic illness was the free public health care that was introduced by the government in 2005. With

the free public health care in Jamaica, the poor has the same access to general health care as the wealthy, and therefore access to health care is not stopped by money or poverty. As a result of the free public health care services, this explains the increase in public hospital and public health care facilities that is highlighted in the current research. The increased public health care utilization is costing the nation more to address the medication and demands of those who are experiencing chronic illness, but this is reducing the burden of out of pocket payment on medical expenditure for ill Jamaicans. With the removal of user fees from public health care services (2007), this equalizes the access to health care services, and reduces the burden on females who are experiencing chronic illness. It was revealed that the number of males reporting chronic illnesses increased by 5.7% in 2007 over 2002 compared to a 10.8% increased among females for the same period. And this provides a rationale for the greater percent increase in health care utilization among females, as they are now able to access more health care services than previously denied because of costing.

Money is still a factor in determining good health status, and not self-reported chronic illness. So, like Marmot [12], Sen [13], and Smith and Kington [21], money is critical in health, but this does not hold true for those with chronic illness. Females with more income are 1.01 times more likely to rate their health status as good-to-very good, indicating that poverty erodes women good health status. This is also captured in where they live as females who dwelled in urban areas in reference to rural zones, and were 1.8 times more likely to report good-to-very good health status. This means that reduction in income, inflation and the decline in economy is more likely to adversely affect females' good health status than that of males. From data that poverty has substantially increase in 2009

over 2008 [5], it can be deduced that females good health status has worsen, while the economic hardship continues to rise with increases in inflation and greater levels of poverty.

With about 2 out of every 3 poor Jamaicans resided in rural area and poverty being a feminized phenomenon (males, 49%; females, 51%) [30], reduction in remittances [5], the failure of many alternative investment schemes in 2008-2009 [31] and the global economic crisis [32], these will undoubtedly erode the good health status of females more than for males. According to Theodore and colleagues [30], "Private as well as public poverty, therefore, can influence health outcome" and while the present study does concur with this perspective, there is a partial agreement as money affect health, but it does not relate to chronic illness. Money which is disproportionately shared among the poor than for those among other social groups, is not explaining chronic illness disparities among Jamaicans, particularly among females. However, it is accounting for people switching from private health care facilities to public health care; and the removal of user fees from public health care services justifies increased health care utilization among Jamaicans.

With the disproportionate need for medical services among females (including, menstruation, pre and post-natal care, pelvic examination, Pap smear, mammogram) than males, which is evident from the greater percentage of females reporting illness than for males and demanding health care utilization costs make it increasingly difficult for them to access medical services in keeping with their increased needs. With no cost for accessing public health services in Jamaica (since 2007 for the populace), this therefore accounts for the increased health care utilization among females (2 times more) and males (1.6 times more). The current findings revealed that there is an increase in health care

utilization, more so among females, and this is not associated with increased visitations, which means that there are more women accessing health care services. Although more females than males were accessing health care services there were significantly less males who are in the poorest 20% accessing health care services (21%) than that for females (5.4%). This suggests that Jamaicans in the poorest 20% were switching from health care utilization in order to meet the increasing cost of goods and services. Inflation increased by 133%, averaging 27% per annum in 2007 over 2002 [5]. This means that the general increases in prices of products and services were resulting in those among the poorest 20% substituting health care utilization. With the clear increases in self-reported illness for 2007 over 2002 among those in poorest 20% in Jamaica, they [the poorest 20%] are foregoing health care services in order to meet basic needs (food, water, and shelter costs). Substantially, more females in the poorest 20% indicating more illnesses in 2007 over 2002 (43%), yet there was a marginal reduction in health care utilization among them, even though public health care is free, highlighting the future health care burden of the society in the coming years as illnesses become severe and people venture for unavoidable health care services, particularly for diabetic and hypertensive individuals.

It should be noted here that the increased health care utilization, particularly public health services, is borne by the society and not the individual as people switch from private to public health care services. This means that the economic burden on the working population becomes more. The rationale that money matters in health outcome cannot be overly stated as someone (individual or government) must provide the financial resources that will allow for the accessing of medical services. The free public health care cost is allowing the poor, economically

vulnerable, rural residents, senior citizens, lowly educated people and females to access needed medical services that would have been difficult otherwise.

The present work highlights that age is the most influential factor explaining chronic illness and good self-rated health status of Jamaica, and this is equally the same across the genders. The ageing of people means the degeneration of the body, which accounts for the increased health problems and health care demand [33-36]. Gompertz's law in Gavriolov and Gavrilova [34] showed that there is 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 [35]. Gompertz's law went further to establish that human mortality increase 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 age of the human adult, but that this becomes less progress in advance ageing. Thus, biological ageing is a process where the human cells degenerate with years (i.e. the cells die with increasing in age), which is explored in evolutionary biology [37-39].

Some studies have shown that using evolutionary theory for “late-life mortality plateaus”, fails because of the arguably unrealistic set of assumptions that the theory uses to establish itself [40-43]. 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 deterioration of humans’ organisms with age [34] as well as non-ageing term. The latter based on Gavrilov and Gavrilova [34] can occur because of accidents and acute infections, which is called “extrinsic causes of death”. While Gompertz's law speaks to mortality in ageing organism due to age-related degenerative illnesses such as heart diseases and cancers, a part of the reliability

function is the non-ageing component. Both Gompertz's law and reliability theory offer some explanation of the importance of age as a factor in determining chronic illnesses.

In keeping with literature that showed a relation between age and health care utilization, health care utilization among poor aged adults could be problematic for the individual. The current study has shown that the age is 1.7 times more likely to report chronic illness, suggesting that the ageing population in Jamaica will create further economic tax burden on the working population. This burden arises in the society because those who seek health care are 2.4 times more likely to report chronic illness. It can be deduced from the finding that the majority of the aged who visit health care services are attending them for chronic health conditions. With most of the aged population being a part of the unemployed, it follows that families will take them to public health institutions in order to reduce out of pocket payment. The opportunity costs of the aged using public health care facilities include 1) more taxes, 2) increased cost of treatment, 3) increased budgetary allocation to the health sector, 4) reduction in budgetary allocations to other sectors (such as education, public utilities) and 5) increased expenditure on medication, training, and facilities for chronic conditions.

Chronic illness is an aged feminized phenomenon. Disaggregating chronic conditions revealed that in 2007, self-reported diabetes was 1.8 times more among females than for males; hypertension was 1.6 times more for females than for males and arthritis was 1.2 times more among males than for females. The figures in the current work were relatively close to that of Wilks and colleagues' research [19]. Wilks and colleagues found that diabetes were 2.8 times more among females than males and hypertension was 1.1 times more for females

than for males. These findings underpin a critical issue, the gendered disparity in contracting particular illness. The World Health Organization [44] opined that there is a disparity between contracting many diseases and the gender constitution of an individual, which explains the chronic illness composition of Jamaicans and the disparities between the genders on particular health conditions. One health psychologist, Phillip Rice, argued that differences in death and illnesses are as a result of differential risks acquired from functions, stress, life styles and 'preventative health practices' [45]. The W.H.O attributes this biomedical condition to difference between the genders based on hormonal differentiations, social networks and support, and cultural and lifestyle practices of the sexes [44].

The face of chronic conditions has implications for health care management, training and services, the country and the family. The challenges of policy makers extend beyond increased chronic illness and health care utilization to include 1) gendered illness, 2) gendered health demand, 3) increased ageing and illness, and 4) health care services that are gendered sensitive in keeping with the realities of the society. The social determinants of health are not constant across genders, and this provides pertinent information on the need to structure health care intervention, management and services around these nuances.

Some findings of importance in this study are 1) there is no difference between self-reported illness among the poor and other wealthy, 2) the educated and the less educated reported the same percentage of chronic conditions, and 3) there were no statistical difference between the self-reported illnesses among those who resided in rural versus urban areas. Those findings contradict the empirical works found in literature, even among those in Latin America [6-8, 17] and the wider developing

nations [9]. However, this study concurs with the literature that illnesses were more reported in older people as was documented in Colombia [17], Peru [46] and other Latin American nations [6-8]. A partial similarity between the literature and this work is area of residence. Like Cortez's work that showed rural residents as reporting more illness [46], this research revealed that difference between self-reported illness among rural and urban dwellers change over time. In retrospect, the works in Latin America [6-8] include Cortez's research were all conducted in 2002, making the findings on rural residents the same for this work and those in other studies at the same period.

What explains some of the other differences between this work and others? Explaining the contradictions between this work and those in Latin America are the expanded coverage of primary health care services, immunization, removal of public health care costs, rationalization of the public health care services, standardization of health care treatment across all geo-political zones, greater investments in health care particularly among rural areas, greater access to information (on television, internet, cellphones), investment in nutrition, increased public health intervention programmes, and the modernization of many rural zones similar to urban centres. These are reducing some of the differences in health outcomes that once existed among people within Jamaica in spite of inequalities in socioeconomic status. Even among empirical studies of the past that have examined health over the lifecourse, and health status as well as health care seeking behaviour among the poorest 20% [47, 48], social disparities among the cohorts emerged and these influence health and health utilization; but there were not gendered focus. This work adds this element, and shows that social inequalities influence gendered health differences and social determinants.

Conclusion

Chronic illness is a feminized phenomenon as well as health care utilization, and public health care demand. It is well established in health literature that the poor is more likely to report a chronic illness, and this was not found to be the case among in the current research. However, income was found to be positively associated with good-to-very good health status; but that this is so for females than males. Changing the definition of health, from self-reported illness to self-rated health status and that disaggregating those concepts by gender, accounts for different social determinants. Importantly, age is the only factor that remains constant across definitions of health, and on disaggregating the data by genders as well as being the most influential factor on self-rated health status of Jamaicans, particularly among males.

Another pertinent finding which emerged from the current work is the gender health care utilization among the different income quintile. Clearly, the economic hardship in Jamaica is resulting in health care utilization switching as those in the poorest 20%; particularly males opted not to use health care services although they reported an illness. This work showed that one in every 2 illness males among the poorest 20% utilizes health care services and the figure was 29 for every 50 females among the poorest 20%. The health care utilization among the poorest 20% of females may appear better for this cohort than that for males; but this is not the case as 43% more females reported illness in 2007 over 2002, yet 5.4% less visited health care institutions. This is within the context that almost 3 out of every 4 women who indicated an illness reported having chronic conditions such as diabetes, hypertension and arthritis.

The current health policy in Jamaica does not speak specifically to gendered health differences and gendered health care [49] as this may be construed as discriminatory. The reality is, there is justification for gendered health studies and gendered health care as without which, there will be a continuation of the gendered health outcome inequalities that present exist in the nation. Hence, there is a need for a policy shift towards addressing food prices than free health care as economically vulnerable, particularly females, are still unable to utilize the services because the other economic conditions retard this choice. The pro-poor health care policy is not effectively reaching the poorest Jamaicans, and therefore health inequality policies must recognize the new realities in order to reduce low coverage of health care utilization among the economically vulnerable, particularly females.

One of the ironies of this study is that public health care are free, yet the greatest increase in health care utilization was among private centres. Both public and private hospitals saw a reduction in visitors over the studied period, with public hospitals showing a greater decline. It can be extrapolated from the current work that there are some embedded anti-behaviour issues that are resulting in switching to public health care services in an environment that has free public health care services. The rate of increase of Jamaicans using private health care facilities compared to public health care facilities showed a greater increase among males than females. There are some issues in the public health care facilities that are result in health care utilization switching, particularly among males, and these must be examined with urgency in order to rectify those conditions.

In summary, the health discourse can be examined from here onwards with a gendered focus. The social determinants of health are somewhat gender specific, which accounts for

health outcome inequalities, health management determination, and that improving health must be gendered specific tasks. With the noticeable health disparities between the genders, these highlight the differences that exist in the health discourse as the health narrative as a gendered focus, and require policies in keeping with the gendered health inequalities.

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Conflict of Interest

The authors have no conflict of interest to report.

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Annex

Self-reported illness (or self-reported dysfunction): The question was asked: “Is this a diagnosed recurring illness?” The answering options are: Yes, Cold; Yes, Diarrhoea; Yes, Asthma; Yes, Diabetes; Yes, Hypertension; Yes, Arthritis; Yes, Other; and No. A binary variable was later created from this construct (1=yes, 0=otherwise) in order to use in the logistic regression.

Self-reported illness was dummied as 1 = reporting an illness and 0 = not reporting an ailment or dysfunction or illness in the last four weeks. While self-reported ill-health is not an ideal indicator of actual health conditions as people may underreport their health condition, it is still an accurate proxy of ill-health and mortality.

Self-reported chronic illness was taken from the question “list the types of illness that you have”. This variable was dummied to 1=yes to chronic illness (hypertension, diabetes and arthritis) and 0=otherwise (acute conditions such as cold, asthma and diarrhoea).

Self-rated health status: “How is your health in general?” The options were very good; good; fair; poor and very poor. For this study the construct was categorized into 3 groups – (i) good; (ii) fair, and (iii) poor. A binary variable was later created from this variable (1=good and very good health, 0=otherwise) [25].

Household crowding: This is the average number of persons living in a room.

Physical Environment: This is the number of responses from people who indicated suffering landslides; property damage due to rains, flooding; soil erosion;

Psychological conditions are the psychological state of an individual, and this is sub-divided into positive and negative affective psychological conditions¹⁸⁻¹⁹. Positive affective psychological condition is the number of responses with regards to being hopeful, optimistic about the future and life generally. Negative affective psychological condition is number of responses from a person on having loss a breadwinner and/or family member, loss of property, made redundancy, failure to meet household and other obligations.

Average income (per person per household) is total expenditure divided by the number of persons in the household

Age: The number of years lived, which is also referred to age at last birthday. This is a continuous variable, ranging from 15 to 99 years.

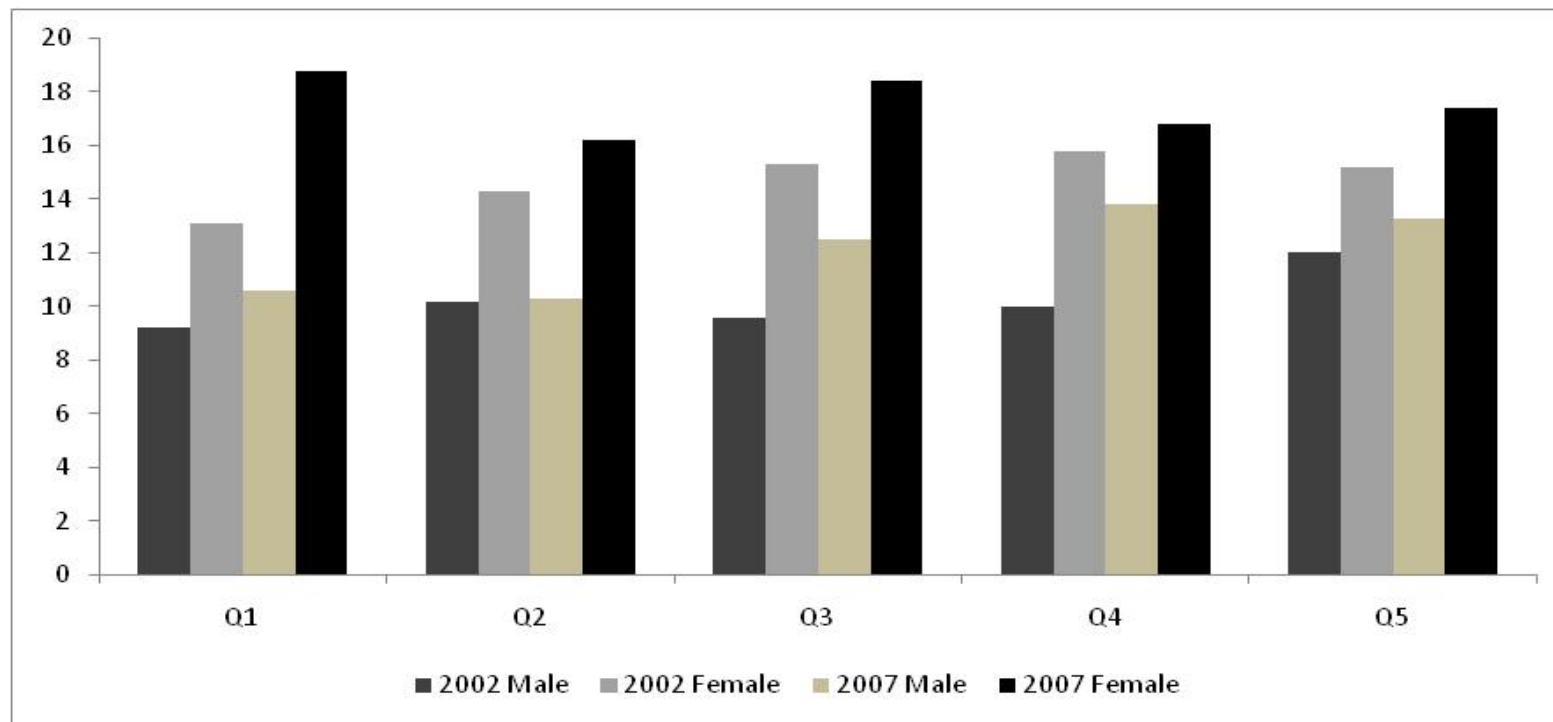
Health Insurance Coverage: This is a dummy variable, where 1 denotes self-reported ownership of health insurance coverage and 0 is otherwise.

Living arrangement is a dummy variable where, 1=living alone, 0= living with family members or relative.

Social support (or network) denote different social networks with which the individual has or is involved (1= membership of and/or visits to civic organizations or having friends that visit ones home or with whom one is able to network, 0=otherwise).

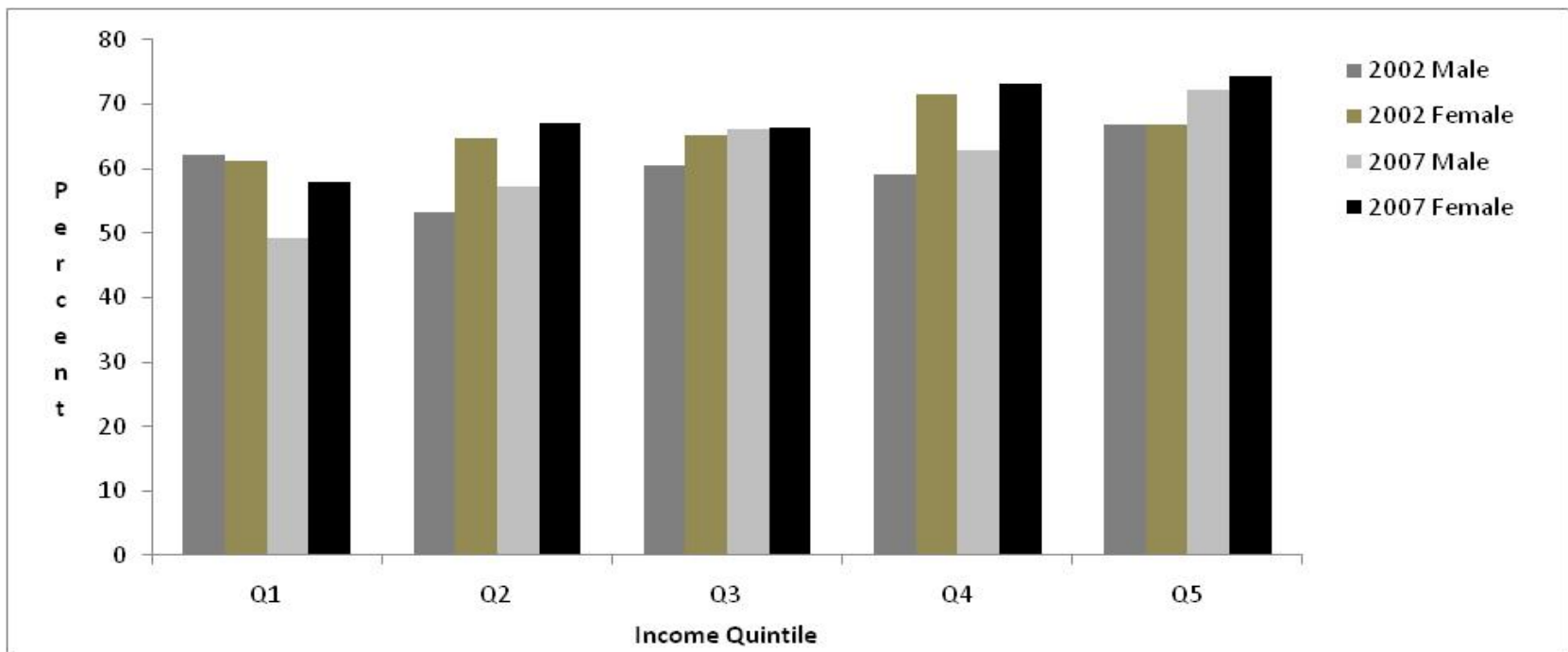
Social class: This variable was measured based on income quintile: The upper classes were those in the wealthy quintiles (quintiles 4 and 5); middle class was quintile 3 and poor those in lower quintiles (quintiles 1 and 2).

Health care-seeking behaviour. This variable came from the question “Has a doctor, nurse, pharmacist, midwife, healer or any other health practitioner been visited?” with the option (yes or no). This was dummied as 1= reporting a doctor’s visit and 0 = otherwise.



Note Q1 to Q5 denotes income quintiles ranging from poorest 20% (Q1) to wealthiest 20% (Q5)

Figure 1: Income quintile by self-reported illness by gender of respondents, 2002 and 2007



Note Q1 to Q5 denotes income quintiles ranging from poorest 20% (Q1) to wealthiest 20% (Q5)

Figure 2: Income quintile by health care utilization by gender of respondents, 2002 and 2007

Table 1: Demographic characteristics of sample by gender, 2002 and 2007

Characteristic	2002		2007	
	Male	Female	Male	Female
	n = 12 332	n = 12 675	n = 3 303	n = 3 479
Health insurance coverage				
	n (%)	n (%)	n (%)	n (%)
No	10 699 (89.8)	10 402 (85.3)	2 560 (80.7)	2 643 (79.0)
Yes	1 217 (10.2)	1 793 (14.7)	612 (19.3)	702 (21.0)
Experienced crime				
Not experienced	9 351 (76.0)	9 815 (77.6)	Not available in dataset	
Experienced	2 954 (24.0)	2 830 (22.4)	Not available in dataset	
Household head				
No	8 393 (68.1)	9 611 (75.9)	2 224 (67.3)	2 551 (73.3)
Yes	3 924 (31.9)	3 045 (24.1)	1 079 (32.7)	928 (26.7)
Educational level				
Primary or below	1 475 (20.9)	1 531 (20.8)	2 819 (87.9)	2 933 (86.6)
Secondary (including technical)	5 259 (74.5)	5 281 (71.9)	337 (10.5)	372 (11.0)
Tertiary	325 (4.6)	535 (7.3)	51 (1.6)	80 (2.4)
Land ownership				
No	3 237 (39.6)	3 177 (38.6)	Not available in dataset	
Yes	4 938 (60.4)	5 061 (61.4)	Not available in dataset	
House Tenure				
Rent free (squat, et cetera)	2 078 (16.9)	1 938 (15.3)	Not available in dataset	
Rented	2 053 (16.7)	2 440 (19.3)	Not available in dataset	
Owned	8 170 (66.4)	8 266 (65.4)	Not available in dataset	
Area of residence				
Rural	7 727 (62.7)	7 524 (59.4)	1 654 (50.1)	1 668 (47.9)
Peri-Urban	3 062 (24.8)	3 337 (26.3)	706 (21.4)	752 (21.6)
Urban	1 543 (12.5)	1 814 (14.3)	943 (28.5)	1 059 (30.4)
Marital status				
Married	2 007 (25.7)	2 043 (24.7)	522 (24.3)	534 (22.4)
Single (never married)	5 421 (69.4)	5 392 (65.2)	1 528 (71.1)	1 608 (67.4)
Divorced	64 (0.8)	59 (0.7)	34 (1.6)	43 (1.8)
Separated	85 (1.1)	100 (1.2)	16 (0.7)	25 (1.6)
Widowed	234 (3.0)	671 (8.1)	50 (2.3)	174 (7.3)
Average Annual Medical Expenditure mean (SD)	\$1 539.84 (\$3 499.86)*	\$1 380.42 (\$2 483.97)*	\$1 304.72 (\$2 162.18)**	\$1 583.88 (\$5 749.91)**

*Money was quoted in Jamaican dollars (US \$1.00 = Ja \$50.97 at the time of the survey)

**Money was quoted in Jamaican dollars (US \$1.00 = Ja \$80.47 at the time of the survey)

Table 2: Health and health care utilization by gender, 2002 and 2007

Female	2002		2007	
	Male		Male	Female
Self-rated health status				
Excellent	NID	NID	1 247 (39.0)	1 183 (35.1)
Good	NID	NID	1 482 (46.4)	1 485 (44.1)
Moderate	NID	NID	331 (10.4)	517 (15.3)
Poor	NID	NID	111 (3.5)	159 (4.7)
Very poor	NID	NID	24 (0.8)	26 (0.8)
Self-reported illness				
Yes	1 217 (10.2)	1 793 (14.7)	388 (12.1)	592 (17.5)
No	10 699 (89.8)	10 402 (85.3)	2 820 (87.8)	2 789 (82.5)
Self-reported diagnosed health conditions				
Cold	287 (26.2)	323 (19.3)	69 (20.2)	80 (14.6)
Diarrhoea	39 (3.6)	44 (2.6)	11 (3.2)	16 (2.9)
Asthma	143 (13.1)	151 (9.0)	47 (13.7)	48 (8.8)
Diabetes	117 (10.7)	239 (14.3)	31 (9.1)	92 (16.8)
Hypertension	162 (14.8)	499 (29.9)	58 (17.0)	148 (27.0)
Arthritis	95 (8.7)	114 (6.8)	24 (7.0)	32 (5.8)
Other (Unspecified conditions)	252 (23.0)	301 (18.0)	102 (29.8)	132 (24.1)
Typology of illness				
Acute conditions	469 (42.8)	518 (31.0)	127 (37.1)	144 (26.3)
Chronic conditions	626 (57.2)	1 153 (69.0)	215 (62.9)	404 (73.7)
Health care utilization				
No	497 (39.3)	616 (34.0)	153 (37.7)	194 (32.4)
Yes	769 (60.7)	1197 (66.0)	253 (62.3)	405 (67.6)
Public Hospital Utilization				
Yes	339 (44.7)	438 (37.3)	78 (31.6)	130 (32.9)
No	420 (55.3)	737 (62.7)	169 (68.4)	265 (67.1)
Private Hospital Utilization				
Yes	66 (8.7)	88 (7.5)	14 (5.6)	30 (7.6)
No	694 (91.3)	1 081 (92.5)	234 (94.4)	367 (92.2)
Public Health Centre Utilization				
Yes	115 (15.1)	267 (22.8)	40 (16.2)	84 (21.2)
No	647 (84.9)	904 (77.2)	207 (83.8)	312 (78.8)
Private Health Centre Utilization				
Yes	307 (40.3)	460 (39.1)	134 (54.0)	197 (49.5)
No	455 (59.7)	1 176 (60.7)	114 (46.0)	201 (50.5)
No of days reported illness				
Percentile 25	3	3	3	3
50	7	7	7	6
75	14	14	14.5	14
No. of visits to health care practitioner¹				
Percentile 25	1	1	1	1
50	1	1	1	1
75	2	2	2	2

NID - not in dataset

¹Number of visits to health care practitioner(s) in last 4 weeks

Table 3: Logistic regression: Explanatory variables of self-reported illness, 2002 and 2007

Characteristics	2002				2007			
	B coefficient	Wald statistic	Odds ratio	CI (95%)	B coefficient	Wald statistic	Odds ratio	CI (95%)
Age	0.04	25.27	1.04	1.02 – 1.05	0.38	8.93	1.04	1.01 – 1.07
Average Annual Medical Expenditure	0.01	4.81	1.00	1.01 – 1.02	NS	NS	NS	NS
Gender (1=male)	-1.33	20.86	0.27	0.15 – 0.47	-1.51	8.54	0.22	0.08 – 0.61
Urban	1.33	3.34	3.77	0.91 – 15.66	NS	NS	NS	NS
Rural (reference group)			1.00					
Number of males in household	0.39	5.02	1.48	1.05 – 2.08	NS	NS	NS	NS
Constant	1.99	24.16	7.31		2.14	10.06	8.51	
Overall percentage				97.0				96.4
Nagelkerke R square				0.118				0.130
-2 LL				499.89				137.10
Model χ^2				58.39, $P < 0.0001$				17.63, $P < 0.0001$
Number of observations				22 289				6 047

Dependent variable: self-reported illness (1=yes and 0=otherwise)

NS - not statistical significant

Table 4: Logistic regression: Explanatory variables of chronic illness (or acute illness), 2002 and 2007

Characteristics	2002			2007		
	B coefficient	Odds ratio	CI (95%)	B coefficient	Odds ratio	CI (95%)
Age	0.05	1.05	1.04 – 1.06	0.03	1.03	1.02 – 1.04
Average Annual Medical Expenditure	0.01	1.00	1.00 – 1.02	NS	NS	NS
Gender (1=female)	0.55	1.74	1.35 – 2.25	0.56	1.73	1.11 – 2.70
Health care seeking behaviour	NS	NS	NS	0.86	2.35	1.53 – 3.63
Constant	-2.25	0.11		-1.40	0.25	
Overall percentage						
Nagelkerke R square						
-2 LL						
Model χ^2						
Number of observations						

Dependent variable: self-reported illness (1=chronic illness and 0=acute illness)

NS - not statistical significant

Table 5: Logistic regression: Explanatory variables of chronic illness (or acute illness) by gender, 2002 and 2007

Characteristics	2002			2007		
	B coefficient	Odds ratio	CI (95%)	B coefficient	Odds ratio	CI (95%)
Male						
Age	0.04	1.04	1.03 – 1.05	0.02	1.02	1.00 – 1.04
Married	-0.67	0.51	0.28 – 0.95	NS	NS	NS
Single (reference group)		1.00				
Average Annual Medical Expenditure	0.01	1.01	1.00 – 1.02	NS	NS	NS
Health care seeking behaviour	NS	NS	NS	NS	NS	NS
Constant	-1.40	0.25		0.22	1.25	
Overall percentage			78.3			79.4
Nagelkerke R square			0.216			0.044
-2 LL			623.91			235.25
Model χ^2			101.53, $P < 0.0001$			6.768, $P = 0.009$
Female						
Age	0.06	1.06	1.05 – 1.07	0.04	1.04	1.03 – 1.06
Average Annual Medical Expenditure	0.01	1.01	1.00 – 1.02	NS	NS	NS
Health care seeking behaviour	NS	NS	NS	1.07	2.91	1.63 – 5.21
Constant	-1.50	0.22		-0.85	0.43	
Overall percentage			83.8			85.8
Nagelkerke R square			0.237			0.141
-2 LL			935.01			316.10
Model χ^2			185.53, $P < 0.0001$			35.379 $P < 0.0001$
Number of observations			2 766			890

Dependent variable: self-reported illness (1=chronic illness and 0=acute illness)

NS – not statistical significant

Table 6: Logistic regression: Explanatory factors of self-rated good health status of Jamaicans, 2007

Characteristic	Coefficient	Wald statistic	Odds ratio	CI (95%)
Age	-0.03	55.63	0.97	0.96 – 0.98
Health care seeking behaviour	-0.69	15.31	0.50	0.35 – 0.71
Self-reported illness	-1.47	9.41	0.23	0.09 – 0.59
Income (proxied by total expenditure)	0.01	7.24	1.01	1.00 – 1.02
Constant	2.77	25.96	15.943	
Overall percentage				72.2
Nagelkerke R square				0.200
-2 LL				828.19
Model χ^2				114.75, P < 0.0001
Number of observations				6 433

Dependent variable: self-rated health status (1=good-to-very good health and 0=otherwise)

Table 7: Logistic regression: Explanatory factors of self-rated good health status of males and females, 2007

Characteristics	2007			
	B coefficient	Wald statistic	Odds ratio	CI (95%)
Male				
Age	-0.06	43.92	0.94	0.93 – 0.96
Health care seeking behaviour	-0.87	9.17	0.42	0.23 – 0.75
Self-reported illness (1=yes)	-1.25	3.84	0.29	0.08 – 1.00
Constant	3.18		24.06	
Overall percentage				75.4
Nagelkerke R square				0.340
-2 LL				355.55
Model χ^2				77.40, $P < 0.0001$
Female				
Income (proxied by total expenditure)	0.01	3.96	1.01	1.00 – 1.02
Age	-0.03	25.96	0.97	0.96 – 0.99
Health care seeking behaviour	-0.52	5.64	0.60	0.39 – 0.92
Self-reported illness (1=yes)	NS	NS	NS	NS
Urban area	0.61	7.35	1.84	1.19 – 2.74
Rural area (reference group)				
Constant	0.70		2.01	
Overall percentage				69.8
Nagelkerke R square				0.126
-2 LL				589.76
Model χ^2				42.71, $P < 0.0001$
Number of observations				6 433

Dependent variable: self-rated health status (1=good-to-very good health and 0=otherwise)

NS - not statistical significant