Original Article

Childhood health in Jamaica: changing patterns in health conditions of children 0-14 years

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Abstract

Background: The new thrust by WHO is healthy life expectancy. Therefore, health must be more than morbidity. It is within this framework that a study on childhood health in Jamaica is of vital importance. **Aims:** This study 1) expands the health literature in Jamaica and by extension the Caribbean, 2) will aid public health practitioners with research findings upon which they are able to further improve the quality of life of children, 3) investigates the age at with children in Jamaica become influenced by particular chronic diseases and 4) assesses the subjective wellbeing of children. **Methods:** The current study extracted a sample of 8,373 and 2,104 children 0-14 years from two surveys collected jointly by the Planning Institute of Jamaica and the Statistics Institute of Jamaica for 2002 and 2007 respectively. A self-administered questionnaire was used to collect the data. **Results:** Ninety-one percent of children in Jamaica, for 2007, reported good health. The number of children who had diarrhea fell by 84.2% in 2007 over 2002, and a similar reduction was observed for those with asthma (42.1% in 2002 and 19.7% in 2007).   Another critical finding was that 1.2% of children, in 2007, had diabetes mellitus compared to none in 2002. **Conclusion:** Public health now has an epidemiological profile of health conditions of children and the demographic shifts which are occurring and this can be used for effective management and planning of the new health reality of the Jamaican child.

Keywords: Child health, health conditions, public health, epidemiology

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Introduction

One of the measures of child health and the health status of the general populace is infant mortality or mortality, which is well studied in Jamaica and the wider Caribbean [1-11]. The simple rationale for the use of mortality in evaluating health status is owing to its ease in which it can be used to precisely measure its outcome unlike other indicators such as quality of life, subjective wellbeing, happiness or life satisfaction [12-22]. Another reason for the use of infant mortality in the measurement of health is because of the strong inverse significant correlation between it and/or general mortality and life expectancy [23, 24]. There is no denial therefore that infant mortality and/or mortality in general play a critical role in determining health outcomes. Although life expectancy emerged from mortality, the former only speak to length of

life and not the quality of those lived years. An individual can live for 40 years or even 100 years, of which all those years were lived in severe morbidity. It is owing to aforementioned rationale why the World Health Organization (WHO) developed a mathematical technique which discount the life expectancy by the years spent in disability or morbidity [25]. The WHO therefore emphasized healthy life expectancy and not life expectancy. Health therefore must be more than morbidity as it expands to quality of life.

Within the broadest definition of health conceptualized by the WHO in the 1940s [26], is social, psychological and physical wellbeing and not the mere absence of diseases suggesting that health is more than living to the quality of those lived years. Health has been expanded to mean much

more than the absence of diseases to include measures of healthy life expectancy, happiness, utility, personal preference, and self-reported quality of life [12-22]. Simply put, wellbeing is subjectively what is 'good' for each person [26]. It is sometimes connected with good health. Crisp [26] offered an explanation for this, when he said that "When discussing the notion of what makes life good for the individual living that life, it is preferable to use the term 'wellbeing' instead of 'happiness'", which explains the rationale for this project utilizing the term wellbeing and not good health.

The issue of wellbeing is embodied in three theories – (1) Hedonism, (2) Desire, and (3) Objective List. Using 'evaluative hedonism', wellbeing constitutes the greatest balance of pleasure over pain [26, 27]. With this theorizing, wellbeing is just personal pleasantness, which represents that more pleasantries an individual receives, he/she will be better off. The very construct of this methodology is the primary reason for a criticism of its approach (i.e. 'experience machine'), which gave rise to other theories. Crisp [26] using the work of Thomas Carlyle described the hedonistic structure of utilitarianism as the 'philosophy of swine', because this concept assumes that all pleasure is on par. He summarized this adequately by saying that "… whether they [are] the lowest animal pleasures of sex or the highest of aesthetic appreciation" [26].

The desire approach, on the other hand, is on a continuum of experienced desires. This is popularized by welfare economics. As economists see wellbeing as constituting satisfaction of preference or desires [26, 27], which makes for the ranking of preferences and its assessment by way of money. People are made better off, if their current desires are fulfilled. Despite this theory's strengths, it has a fundamental shortcoming, the issue of addiction. This forwarded by the possible addictive nature of consuming 'hard drugs' because of the summative pleasure it gives to the recipient.

Objective list theory: This approach in measuring wellbeing list items not merely because of pleasurable experiences nor on 'desire-satisfaction' but that every good thing should be included such as knowledge and-or friendship. It is a concept influenced by Aristotle, and "developed by Thomas Hurka as perfectionism" [26]. According to this approach, the constituent of wellbeing is an environment of perfecting human nature. What goes on an 'objective list' is based on reflective judgment or intuition of a person. A criticism of this technique is elitism. Since an assumption of this approach is that, certain things are good for people. Crisp [26] provided an excellent rationale for this limitation, when he said that "…even if those people will not enjoy them, and do not even want them".

In Arthaud-day et al's work [28], applying structural modeling, subjective well was found to constitute "(1) cognitive evaluations of one's life (i.e., life satisfaction or happiness); (2) positive affect; and (3) negative affect." Subjective wellbeing therefore is the individual's own viewpoint. If an individual feels his/her life is going well, then we need to accept this as the person's reality. One of the drawbacks to this measurement is, it is not summative, and it lacks generalizability.

In keeping therefore with the broad definition of health forwarded by the WHO, any study of health must go beyond mortality. A comprehensive search of health literature in the Caribbean in particular found no research that 1) using national cross-sectional survey(s) examined health status of children, 2) investigated the changing pattern of morbidity which affect children ages 0-14 years, 3) investigated whether health status (i.e. subjective wellbeing) and self-reported morbidities (i.e. health conditions) are correlated, and if they are good measure for each other, 4) investigated whether from among the health conditions, chronic diseases and the time they begin to affect children as well as the 5) demographic characteristics of health conditions affecting children. The current study will examine the aforementioned issues as health literature in the region on child health must expand beyond infant mortality. The objectives of the study are to 1) expand the health literature in Jamaica and by extension the Caribbean, 2) understand the status of child health outside of mortality, 3) aid public health practitioners with research upon which they are able to further improve the quality of life of children by adding quality to their lived years, 4) investigate the age at with children in Jamaica become influenced by chronic disease, it typology and 5) evaluate the subjective wellbeing of children as is done for the general populace and elderly [30-37].

The current study used two cross-sectional surveys which were conducted jointly by the Planning Institute of Jamaica and the Statistical Institute of Jamaica (for 2002 and 2007) that collect data on Jamaicans. A subsample of 8,373 and 2,104 children 0-14 years was extracted from a sample of 25,018 and 6,783 respondents for 2002 and 2007 respectively. The survey was a national probability sample of Jamaica, and it was weighted to reflect the populace and sub-populations. The response rate for each survey was in excess of 72%. Descriptive statistics, such as mean, standard deviation (SD), frequency and percentage were used to analyze the socio-demographic characteristics of the sample. Chi-square was used to examine the association between non-metric variables, and Analysis of Variance (ANOVA) was used to test the relationships between metric and non-dichotomous categorical variables whereas independent sample t-test was used to examine a statistical correlation between a metric variable and a dichotomous categorical variable. The level of significance used in this research was 5% (i.e. 95% confidence interval).

Materials and Methods

The current study extracted a sample of 8,373 and 2,104 children 0-14 years from two surveys collected jointly by the Planning Institute of Jamaica and the Statistics Institute of Jamaica for 2002 and 2007 respectively.[38,39] The method of selecting the sample from each survey was

solely based on an individual being less than or equal to 14 years. The survey (Jamaica Survey of Living Condition) began in 1989 to collect data from Jamaicans in order to assess policies of the government. Since 1989, yearly the JSLC adds a new module in order to examine that phenomenon which is critical within the nation. In 2002, the foci were on 1) social safety net and 2) crime and victimization; and for 2007, there was no focus. The sample for the earlier survey was 25,018 respondents and for the latter, it was 6,783 respondents.

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 residence in rural areas and 150 in urban areas. An ED is an independent geographic unit that shares a common boundary. This means that the country was grouped into strata of equal size based on dwellings (EDs). Based on the PSUs, a listing of all the dwellings was made, and this became the sampling frame from which a Master Sample of dwelling was compiled, which in turn provided the sampling frame for the labor force. One third of the Labor Force Survey (i.e. LFS) was selected for the JSLC. [40, 41] The sample was weighted to reflect the population of the nation.

The JSLC 2007 [40] was conducted May and August of that year; while the JSLC 2002 was administered between July and October of that year. The researchers chose this survey based on the fact that it is the latest survey on the national population and that that it has data on self-reported health status of Jamaicans. A self-administered questionnaire was used to collect the data, which were stored and analyzed using SPSS for Windows 16.0 (SPSS Inc; Chicago, IL, USA). The questionnaire was modeled from the World Bank's Living Standards Measurement Study (LSMS) household survey. There are some modifications to the LSMS, as JSLC is more focused on policy impacts. The questionnaire covered areas such as socio-demographic variables – such as education; daily expenses (for past 7-day; food and other consumption expenditure; inventory of durable goods; health variables; crime and victimization; social safety net and anthropometry. The non-response rate for the survey for 2007 was 26.2% and 27.7%. The non-response includes refusals and rejected cases in data cleaning.

Measures
Social class: This variable was measured based on the income quintiles: 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 behavior. This is a dichotomous variable which came from the question "Has a doctor, nurse, pharmacist, midwife, healer or any other health practitioner been visited?" with the option (yes or no).

Age is a continuous variable in years.
Child. A person who has celebrated less than or equal to 14 years.

Health conditions (i.e. self-reported illness or self-reported dysfunction): The question was asked: "Is this a diagnosed recurring illness?" The answering options are: Yes, Cold; Yes, Diarrhea; Yes, Asthma; Yes, Diabetes; Yes, Hypertension; Yes, Arthritis; Yes, Other; and No. Self-rated health status: "How is your health in general?" The options were very good; good; fair; poor and very poor.

Statistical Analysis
Descriptive statistics, such as mean, standard deviation (SD), frequency and percentage were used to analyze the socio-demographic characteristics of the sample. Chi-square was used to examine the association between non-metric variables, and Analysis of Variance (ANOVA) was used to test the relationships between metric and non-dichotomous categorical variables whereas independent sample t-test was used to examine a statistical correlation between a metric variable and a dichotomous categorical variable. The level of significance used in this research was 5% (i.e. 95% confidence interval).

Results
For this study there were two samples (8,373 from 2002 data survey and 2,104 from the 2007 survey). In 2002, the sample was 50.7% males and 49.3% females compared to 51.3% males and 48.7% females for 2007.   The mean age for the sample in 2002 was 7.2 years (SD = 4.2 years) and 7.3 years (SD = 4.3 years) for 2007. The proportion of the sample in particular social class (using population income quintile) was relative the same across the two years. The number of days recorded as suffering from illness fell by 2 days in 2007 over 2002 (median number of days experiencing ill-health). In 2002, 9.4% of the sample reported an illness/injury in the 4-week period of the survey and this increased by 34.0% (to 12.6%). The percent of the sample that visited health care practitioners marginally increase from 56.7%, in 2002, to 58.6% in 2007. Concurrently, 9.3% of sample was covered by health insurance (i.e. total private in 2002) and this increased by 62.4% and a part of this was accounted for by a 5.1% having public health insurance coverage. In 2002, 62.6% of the sample dwelled in rural areas, 25.1% in semi-urban areas and 12.3% in urban areas compared to a shift which was noticed in 2007 as 53.2% resided in rural areas and 20.2% in semi-urban areas with 26.6% lived in urban zones (Table 1).

The general health status of children in Jamaica, for 2007, was good (91.3%) compared to 6.7% fair and 2.0% poor.

Interestingly, in the current study, a shift in health condition was noticed in 2007 over 2002. The number of children who had diarrhea fell by 84.2% in 2007 over 2002, and a similar reduction was observed for those with asthma (42.1% in 2002 and 19.7% in 2007).   Another

critical finding was that 1.2% of children, in 2007, had diabetes mellitus compared to none in 2002. On the contrary, 37.5% of children, in 2007, had cold which increased from none in 2002 (Table 1).

Table 1 Sociodemographic characteristic of sample

Variable	2002	2007
	N= 8373	N=2104
Sex		
Male	50.7	51.3
Female	49.3	48.7
Health care-seeking behavior		
Yes	56.7	58.6
No	43.3	41.4
Health insurance coverage		
Yes	9.3	15.1
No	90.7	84.9
Area of residence		
Rural	62.6	53.2
Semi-urban	25.1	20.2
Urban	12.3	26.6
Self-reported illness		
Yes	9.4	12.6
No	90.6	87.4
Diagnosed Health conditions		
Cold	-	37.5
Diarrhea	31.6	5.0
Asthma	42.1	19.7
Diabetes mellitus (i.e. diabetes)	-	1.2
Hypertension	-	-
Arthritis	-	-
Other	26.3	20.8
Not	-	17.0
Population Income quintile		
Poorest 20%	26.0	26.0
Poor	22.9	22.6
Middle	20.3	19.5
Wealthy	18.0	18.9
Wealthiest 20%	12.8	13.0
Age Mean (SD)	7.2 yrs (4.2 yrs)	7.3 yrs (4.3 yrs)
Length of illness Median	7 days	5.0 days
Number of visits to health practitioner(s) median	1.0	1.0
Crowding mean (SD)	2.5 persons (1.5persons)	5.5persons (2.3persons)

A cross-tabulation between health conditions and sex of respondents, revealed that no significant statistical correlation existed between the two variables and that this was for both years: For 2002 - χ^2 (DF = 2) = 0.232, p> 0.05; and for 2007 - χ^2 (DF = 5) = 8.915, p> 0.5 (Table 2). In spite of the aforementioned, the new diabetic cases were accounted for by females (for 2007).

Table 2 Diagnosed health conditions by Sex, 2002 and 2007

Variable	2002[1]		2007[2]	
Diagnosed Health conditions	**Male**	**Female**	**Male**	**Female**
Cold	-	-	35.7	39.2
Diarrhea	27.3	37.5	3.1	6.9
Asthma	45.5	37.5	21.7	17.7
Diabetes	-	-	0.0	2.3
Hypertension	-	-	-	-
Arthritis	-	-	-	-
Other	27.3	25.0	19.4	22.3
No	-	-	20.2	11.5

[1]$\chi2$ (DF = 2) = 0.232, p> 0.05; [2]$\chi2$ (DF = 5) = 8.915, p> 0.5

In 2002, no significant statistical relationship existed between diagnosed health conditions and area of residents (χ^2 (DF = 4) = 1.301, p > 0.05). On the other hand, a statistical correlation was observed for 2007 between the aforementioned variables. Furthermore, more children in semi-urban areas had cold than those who dwelled in other areas. On the contrary, diabetic cases were found in urban areas and none in other geographical zones. The findings revealed also that more rural children had asthma and more urban children had unspecified health conditions (Table 3).

Table 3 Diagnosed health conditions by area of residence

Variable	2002[1]			2007[2]		
Diagnosed Health Conditions	Rural	Semi-urban	Urban	Rural	Semi-urban	Urban
Cold	-	-	-	27.0	56.5	36.0
Diarrhea	33.3	40.0	0.0	-	2.2	8.0
Asthma	41.7	40.0	50.0	25.4	15.2	18.7
Diabetes	-	-	-	-	-	2.3
Hypertension	-	-	-	-	-	-
Arthritis	-	-	-	-	-	-
Other	25.0	20.0	50.0	20.6	13.0	23.3
No	-	-	-	27.0	13.0	12.0

[1]χ^2 (DF = 4) = 1.301, p > 0.05; [2]χ^2 (DF = 10) = 25.079, p = 0.005, cc = 0.297

Table 4 Diagnosed health conditions by population income quintile

Variable	2002[1]					2007[2]				
Diagnosed Health Conditions	**Poorest 20%**	**Poor**	**Middle**	**Wealthy**	**Wealthiest 20%**	**Poorest 20%**	**Poor**	**Middle**	**Wealthy**	**Wealthiest 20%**
Cold	-	-	16.7	14.3	50.0	35.8	37.5	44.3	36.7	30.0
Diarrhea	75.0	-	66.7	57.1	0.0	3.8	12.5	4.9	2.0	0.0
Asthma	0.0	-	-	-	-	22.6	17.9	18.0	14.3	27.5
Diabetes	-	-	-	-	-	1.9	1.8	0.0	2.0	0.0
Hypertension	-	-	-	-	-	-	-	-	-	-
Arthritis	-	-	-	-	-	-	-	-	-	-
Other	25.0	-	1.0	28.6	50.0	28.3	19.6	16.4	20.4	20.0
No	-	-	-	-	-	7.5	10.7	16.4	24.5	22.5

[1]χ^2 (DF = 6) = 8.105, p > 0.05; [2]χ^2 (DF = 20) = 25.079, p > 0.05

Table 4 revealed that no significant association was found between diagnosed health condition and social class (i.e. population income quintile). However, the diabetic cases were spread among the lower class (poorest 20%, 1.9%; and poor, 1.8%) and the upper class (wealthy, 2.0%).

The examination of diagnosed health conditions by mean age of respondents revealed that a significant relationship existed between the two aforementioned variables in 2007, F statistic = 4.875, p < 0.001; but none in 2002 - F statistic = 3.334, p > 0.05.   In 2007, the mean age of a child with diabetes mellitus was 12.33 years (SD = 2.1 yrs), 95% CI = 7.16 – 17.5 (Table 5). However the mean age of a child with diarrhea lower than a child and other health conditions.

Table 5 Mean Age of respondent who has a particular health condition

Variable	2002[1]		2007[2]	
Diagnosed Health conditions	**Mean age (SD)**	**95% CI**	**Mean age (SD)**	**95% CI**
Cold	-	-	4.4 yrs (4.0 yrs)	3.55 - 5.15
Diarrhea	1.5 yrs (1.5yrs)	0.09- 3.09	3.5 yrs (2.8 yrs)	1.93 - 5.15
Asthma	5.0 yrs (3.0 yrs)	2.51- 7.49	6.5 yrs (3.5 yrs)	5.51 - 7.47
Diabetes	-	-	12.33 yrs (2.1 yrs)	7.16 - 17.5
Hypertension	-	-	-	-
Arthritis	-	-	-	-
Other	5.4 yrs (3.8 yrs)	0.62- 10.18	6.0 yrs (4.5 yrs)	4.82 - 7.26
No	-	-	5.8 yrs (4.3)	4.46 - 7.20

[1]F statistic = 3.334, p > 0.05; [2]F statistic = 4.875, p < 0.001

The first time in the history of the Jamaica Survey of Living Conditions (JSLC) that health status and self-reported health condition were collected together was in 2007. Hence, the current study will cross-tabulate both in order to determine whether a significant correlation exist between them and what is the strength of a relationship if one does exist. Based on Table 6 a weak significant statistical association exist between health status and self-reported health condition - χ^2 (DF = 2) = 174.512, p < 0.0001, cc= 0.282. On further examination of the findings, it was observed that no child was classified as having very good health status. Ninety-four percent of sample who had no health condition reported good health compared to 70% of those who had at least one health condition. Of those who had at least one health condition, 9.4% of them reported poor health status compared to 1% who had no health condition (Table 6).

Table 6 Health status by self-reported illness

Variable	2002[1]		2007[2]	
	Self-reported illness		**Self-reported illness**	
Health status	**None (%)**	**At least one (%)**	**None (%)**	**At least one (%)**
Very good	-	-	-	-
Good	-	-	94.3	70.2
Fair	-	-	4.7	20.4
Poor	-	-	1.0	9.4

[1]In 2002, health status data were not collected. This took place the first time in 2007; [2]χ^2 (DF = 2) = 174.512, p < 0.0001, cc= 0.282

Using independent sample t-test, in 2002, the current study found that there was a significant difference between the mean age of those who sought and not seek medical care – $t_{3.425}$, p < 0.001. The mean age of those who do not seek medical care higher, 6.2 years (SD = 4.1), compared to those who seek care, 5.2 years (SD = 4.2 years). However, there was no difference in 2007: seek care – mean age 5.2 years (SD = 4.1 years) and not seek care – mean age 5.8 years (SD = 4.2 years).

On examination as to whether a significant statistical correlation existed between health care-seeking behavior and sex of respondents, none was found in each year – p > 0.05 (Table 7).

Table 7 Health (or medical) care-seeking behaviors by sex

Variable	2002[1]		2007[2]	
	Sex		**Sex**	
	Male	**Female**	**Male**	**Female**
Health care-seeking behavior				
Sought care	42.2	44.5	40.8	42.0
not seek care	57.8	55.5	59.2	58.0

[1]χ^2 (DF = 1) = 0.419, p > 0.05; [2]χ^2 (DF = 1) = 0.040, p > 0.05

Discussion

It is established in epidemiology that diseases in childhood do influence poor health in adulthood [42], suggesting the value of child health to health status over the life course. Another importance to the study of health status is its contribution to all typology of development as human capital is critical to socio-economic and political systems. In Jamaica, the Statistical Institute of Jamaica [42] estimated that for 2007, there was 28.3% of the nation's population was less than 14 years. Simply put, there are 45 children for every 100 working age (ages 15-64 years) Jamaican; and to omit the health status of this cohort is to substantially neglect a critical sector of the population. The current study found that 2 in every 100 children had poor health status; and that weak significant statistical correlation existed between health status and self-reported health conditions. This therefore concurs and contradicts another study that found statistical association between health conditions and health status [36]. Hambleton et al. [36], examining data for elderly Barbadians, found that self-reported health conditions accounted for most of the variability in health status (i.e. current diseases accounted for 33.5% out of R^2 = 38.3%).

This takes the study in the direction of current diseases (i.e. health conditions) of children in Jamaica. This study revealed 34% increase in cases of self-reported diseases in Jamaican children. Only 13 in 100 children in Jamaica, in 2007, had a least one health condition. These conditions include cold, diarrhea, asthma, diabetes mellitus and other unspecified diseases. In 2007, 20 in every 100 children had asthma, 5 out of every 100 diarrhea cases, 38 in every 100 had cold and 21 in every 100 unspecified conditions. Of the different typology of chronic dysfunctions, 12 in every 1,000 reported diabetes mellitus and no cases were found of hypertension and arthritis. Given the breadth of the unspecified category, this could include cancers, HIV/AIDS and other communicable or non-communicable

diseases. In spite of this uncertainty, what emerged from the current research is the change in pattern of health conditions of children between 2002 and 2007. A study conducted by Walker [43] found that growth retardation in children influence blood pressure, obesity, and other chronic health conditions, and that some 5-6% of children in Trinidad and Tobago, and Jamaica are classified in this group. Walker also found that these children are more likely to experience more episodes of diarrhea, fever and other morbidities.

This research revealed that number of cases of asthma, diarrhea and unspecified conditions fell accompanied with a corresponding rise in cold and diabetes mellitus. Interestingly to note is that the 1.2% of child population that were diagnosed diabetic patients represents 2.3% of the female population. The diabetic cases were not only females, but urban residents. Of those with diabetes, 1.9% was in the poorest 20%, 1.8% poor and 2.0% of the wealthy social class. Continuing, the mean age of female diabetic children was 12.3 years; and this indicates the year age in which diabetes mellitus begin to affect females in Jamaica. The aforementioned finding explains the disproportionate number of females to males in the general population that have diabetes -14% females to 7.7% males [40]. Although no cases of hypertension was reported in this study, it is established that diabetes mellitus is correlated with hypertension.

Diabetes Mellitus is not the only challenge faced by patients, but McCarthy [44] argues that between 30 to 60% of diabetics also suffer from depression, which is a psychiatric illness. Diabetes mellitus does influence the health status of children and follows them across the life course. It affects lifestyle choice, functional capacity, and like McCarthy said the psychological state of people. This health condition also affects other disease. Morrison [45] opined that diabetes mellitus and hypertension have now become two problems for Jamaicans and in the wider Caribbean. This situation was equally collaborated by Callender [46] who found that there was a positive association between diabetic and hypertensive patients - 50% of individuals with diabetes had a history of hypertension [46]. Children with diabetes mellitus therefore are highly likely to develop hypertension in the future, and so children in Jamaica in the future will have twin chronic conditions. This envelope further shifts in health conditions of children in Jamaica; Morrison alluded to a transitory shift from infectious communicable diseases to chronic non-communicable diseases as a rationale for the longevity of the Anglophone Caribbean populace and this does not mitigates against lowered healthy life expectancy of the sexes in particular females who live 6 years more than males [34,42].

Diabetes mellitus and any other typology of chronic diseases do more than affect healthy life expectancy; they are directly correlated with mortality. Statistics from the Statistical Institute of Jamaica [42] is the leading cause of deaths in female Jamaicans. The reality of changing pattern of health conditions from communicable to

non-communicable and the fact that this is accounted with urban poor and wealthy, indicate that public health policies are needed to address this currently and in the future. Another important fact that embedded in the current study is the early age in which females are having chronic disease, and this indicates the length of time with which they will life with this non-curable disease or likeliness of mortality.

A study on morbidity and mortality patterns in the Caribbean established that the transition in morbidity is not atypical to Jamaica [47], and that the leading cause of mortality in region is similar to developed nations. WHO [48] opined that 80% of chronic illnesses were in low and middle income countries, indicating the preponderance of chronic illness in regions such as the Caribbean as well as the fact that chronic illnesses are also a part of the landscape of industrialized nations. With the changing pattern of morbidity of children in Jamaica, this will support modifications in lifestyle behavior which must begin from children to the populace.

Although there is no statistical difference between the 3 area of residents and health conditions, the fact that the chronic dysfunctions were found in urban areas denote that public health policies must begin in earnest in those places. There is another situation that must be explored here and that is response of health services, and the management of care for those who are affected by chronic illnesses. It should be noted that 57 out of every 100 children were taken for medical care which speaks to the high proportion of children despite being ill who were not taken to traditional medical facilities. A part of the rationale for this non-medical care seeking behavior of children is adults' definition of health and the cultural perspective of health.

Generally, health in Jamaica is defined as the absence of illness which although is negative and narrow in scope speaks to people's perspective on the matter. Interestingly in this discourse is not only the narrowed definition of health, but that severity in health conditions is substantially what drives medical care-seeking and not on the onset of illness or preventative care. This goes to the crux of why only 57 out of every 100 children who are ill would be taken to health care practitioners as their families are less likely to taken then for conditions such as the cold, but also provide an explanation for the low medical care seeking behavior for the general populace.

Statistics revealed that for the last two decades (1988-2007), there were 4 times (years) in which males sought more medical care than females – 1991 (48.5% males to 47.4% females); 1995(59.0% males to 58.9% females): 1997 (60.0% males to 59.3% females) and 2006 (71.7% males to 68.8% females) [30, 41, 40], which speaks to some embedded culturalization for this health care-seeking disparity in nation. While this is not atypical to Jamaica [49-51], the fact that the current study revealed that there was no significant statistical difference between male and female children being taken for medical care,

this explains the disparity that exists in the general populace begin in young adulthood. This is the period in which identify formation begins in adolescents and when young males begin to imitate the practices of adult men. The adolescent male therefore will seek less medical care because his adult counter believes that this is weak, feminine and reduces his machoism.

One anthropologist in seeking to explain the practices of Caribbean men used social learning theory to examine the lifestyle practices of boys [52]. Chevannes [52] argued that the young imitate the roles of society members through role modeling of what constitute acceptable and good roles which is supported by reinforcement. The young male is a subset of the society, and if men are less likely to seek health care because of a cultural perspective that they form of ill-health which goes to the crux of their manhood and possibly seeks to threaten it, young males as soon as they are somewhat responsible for their choices will do more of the same as their mentors. This gender role of sexes and health disparity which results after childhood is not limited to Jamaica or the Caribbean but a study carried out by Ali and de Muynck [53] found that street children in Pakistan had a similar gender stereotype about health, health care and medical care seeking-behavior. Using a descriptive cross-sectional study carried out during September and October 2000 of 40 school-aged street children (8-14 years), they found boys were reluctant to seek medical care except when there is severity of ill-health, it threatens their economic livelihood or there is a perceived reduction in functional capacity. The reason being that mild ailment is not severe enough to barr them from physical functioning and within the context of the general population that men ought to be tough, this means that they are okay; and so some morbidity are not for-hospital, which was so the case in Nairobi slums [54]. This again justifies why some children in Jamaica are not taken to health practitioners as there is a perception that some illness requires home remedy.

Statistics revealed that 56.0% of children (ages 0-4) who were not taken for medical treatment despite having an illness was because home remedies were used, figure was 32.8% for those 5-9 years and 25.6% for those 10-19 years [40]. Inaffordability accounted for 33%, 32.5% and 35.9% of those ages 0-4 years, 5-9 years and 10-19 years respectively who were not brought to health care practitioner even though they were ill.

Conclusions

The general health status of children in Jamaica is good; but this mitigate against the relatively low age with which females are reported to have had diabetes mellitus and the changing pattern of health conditions which have occurred since the 2002. Public health now has an epidemiological profile of health conditions of children and the demographic shifts which are occurring and this can be used for effective management and planning of the new health reality of the Jamaican child. With the removal of health care user fees for children ages 0-18 years from the

health care landscape of Jamaica (since May 28, 2007), the transition to chronic cases in this cohort means that health care expenditure in the future will rise as we seek to care for those patients over there life course. It is critical that future research examine the composition of unspecified health conditions as this constitutes a significant percentage of diseases in 2007 unlike 2002.

Conflict of interest

There is no conflict of interest to report

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