Well-being of the Working Aged Population: Using two different measures of well-being and evaluating likely changes in psychosocial determinants of health

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Abstract: This paper examines particular psychosocial and ecological conditions as a function of well-being of the working aged population in Jamaica. Our aim is to determine which predisposed factors can predict well-being based on its definition - whether or not well-being is conceptualized as dysfunctions or income per capita. The paper's focus was on two models (i.e. Models 4 and 5), with Model 4 being self-reported dysfunctions and Model 5 being individual's income (proxy consumption per capita). The study used one of the World Bank's Living Standard Measurement Surveys (LSMS) - the Jamaica Survey of Living Conditions (JSLC). The JSLC was conducted between June and October 2002, it is a subset of the Labour Force Survey (i.e. ten percent). The sampled population was 14,299 working aged people (ages 15 to 64 years), with the mean age of 34.06 years $\pm$ 13.48 years. The Model 4 explains 21.6% of the variance in well-being. Union status, house tenure, health care seeking behaviour, social support, gender, crime, negative and positive psychological conditions, age and consumption per capita were found to be predictors of well-being (proxy dysfunctions). The primary finding of Model 5 is - using individual income per capita (i.e. proxy individual consumption per capita) – that the model explains 39.1% of the variance in well-being. Model 5 explains 17.5% than Model 4, which means that it is better to operationalize well-being from an objective perspective than to use self-reported dysfunctions. Some additional findings from Model 5 will be presented hereafter. The most influential factor using Model 5 is household crowding (β= -0.422, $P \leq 0.001$). Dysfunctions are commonly used to evaluate health, functional status and/or well-being in Western societies. Thus, medical disorders (diseases or health conditions) are the primary reasons people give for seeking health care. Our findings show that using self-reported dysfunctions to evaluate well-being is not a good measure as the psychosocial and ecological factors have a low explained variance than when wellbeing that is operationalized using consumption per capita.

Keywords: Health conditions; dysfunctions; health; psychosocial conditions; social determinants, ecological factors; self-reported health; well-being, working aged population, Jamaica

INTRODUCTION

The current study examines the relationship between economic resources and psychosocial conditions as well as ecological factors on the well-being of the working age populace in Jamaica. This study seeks to address three specific issues. First, what are the factors that determine well-being of the working age populace in Jamaica? Second, how much of an impact do (1) economic resources; (2) sociopsychological conditions, and (3) ecological factors have on well-being? Third, which predisposed factors can predict well-being based on its definition and (4) whether or not well-being is conceptualized as dysfunctions or income per capita.

The issue of health has always fascinated humans. One of the reasons for this intrigue is the relationship between health and mortality, thus igniting human self- interest to examine this phenomenon at great lengths and devising yardsticks to measure the quality of health. Pre-modernity, the absence of diseases was the ultimate yardstick measurement of health, (i.e. 130 CE to 200 CE) [1]. The World Health Organization (WHO), however, recognized that this was one-dimensional and offered an alternative conceptual framework in the middle of the 1900s.

According to the WHO [2], health is not merely the absence of diseases or infirmity but it is the state of complete physical, social and psychological well-being [2]. The 20th century has seen a drastic change in the pattern of diseases simultaneously with increased life expectancy in the world. Thus, should the emphasis be on outcome of diseases as measure of health or should there be a more thorough evaluation of the psychosocial and ecological conditions when assessing health?

Within the context of a study carried out by Powell, Bourne and Waller [3], it was found that 42.5% (n=568 out of 1,338) Jamaicans were concerned about their future employment within the next 12-month period; 59.4% (n=795 out of 1,338) remarked that 'most people are essentially not good and cannot be trusted; 57.4% (n=767) indicated that their salaries and that of their family's cannot cover their expenses; (38.1%, n=509) believed that their future economic situation will be about the same or less over the next 12-month period. The surveyed population's socioeconomic condition is about average, meaning that Jamaicans are experiencing, among other things, changes in their sociopolitical conditions. What aspects of the socio-political factors that impact Jamaicans influence their health status, particularly the work aged population? This research seeks to answer this question.

Health discourse: Life Expectancy, dysfunctions
Globally, regionally and nationally life expectancy has more than doubled since the 19th century, and so has non-communicable diseases such as diabetes mellitus, heart diseases, cancers and other disorders [1, 4]. In 1999 a report published by the World Health Organization (WHO) revealed that non-communicable diseases accounted for 54 percent of the deaths in low-income countries compared to 87 percent in high-income countries [5]. Whereas communicable diseases and maternal and prenatal conditions accounted for 35 percent of the deaths in low to middle-income nations, only 6 percent of mortality was recorded in high-income countries. A group of scholars have examined 'emerging and re-emerging infectious diseases' [6], and reported that these have captured the public's thoughts as well as the awareness of the scientific society. They argued that those diseases are due to ecological disruptions that have led to warmer climates, more hurricanes and storms, and earthquakes [7]. Barrett and colleagues [6] have outlined that in the last 15 years, diseases like dengue has been on the increase as well as various types of viral flu, tuberculosis and HIV/AIDS. It follows, therefore, that irrespective of all the gains in better nutrition, water supply, sanitation and medical technology, people are living longer but they are not necessarily healthier.

Now that people have been living longer and will continue to live even longer, within the context of increased non-communicable diseases due to lifestyle practices and other things, our emphasis cannot be on longevity. In the 1990s, the World Bank in collaboration with the WHO operationalized health by developing what is called the healthy life expectancy index to discount 'bad health' from longevity (life expectancy) [8]. The organizations found that 14 and 9 years should be subtracted from the life expectancy of people who reside in developing and developed countries respectively for the loss of quality years living with diseases. However, based on the computation given by the WHO [8], 9 years are taken from the life expectancy of Jamaicans for 'bad health'. Although the WHO's work is widely used by scholars, many people still use physical limitations (or diseases) to define and conceptualize health. This limited conceptualization of health has pushed the health discourse to examine psycho-social wellbeing, social determinants that influence one's health status based on a certain operational definition.

Historical framework
Although the WHO forwarded the perspective that health goes beyond the absence of diseases (or dysfunctions) or ailments since 1946 [2], the concept of health is still predominantly conceptualized in Jamaica as the 'absence of diseases' (or using dysfunctions or functional status). Initially the WHO's definition of health was seen as an elusive concept that was impossible to measure [9]. However, this belief has been changing since the start of the twentieth century. Grossman [10] developed a conceptual model to examine various socioeconomic conditions' influence on the health of people in the world as a beginning to the practicality in understanding the factors that impact one's health status. Smith and Kington [11] used functional status as the definition for health to expand on Grossman's model. In 2005 Hambleton, Clarke, Broome, Fraser, Braithwaite and Hennis published a study, which was commissioned by Pan American Health Organization (PAHO) that researched elderly Barbadians' (persons ages 60+) [12] self- reported health status. It was a nationally representative sample of 1,878 respondents (response rate was 80%, n=1,508). The study was conducted between December 1999 and June 2001. Another study conducted by Hambleton et al. also [12] used self-reported health status to measure health and reported income as a determinant of wellbeing.

"Does income matter in understanding health? If this is so, the issue of why is important in understanding the income-health dynamics?" [13]. Income is the passport to a better quality of life, but this does not go indefinitely. Not only is it possible for money to buy better health, but that better health could matter for money. This is evident in poor countries and the stark dissimilarities with rich nations in regard to quality of life of their citizens. Using life expectancy to argue the point of quality of life, in the developed

societies their life expectancy is more than that of the developing nations. Among the attributes of riches are – (i) the purchase, use and discovery of advance medical technology; (ii) better sanitation and public health; (iii) better quality water and food; among other things.

There is no doubt that clean water is a vital ingredient of 'good health'. But, many developing societies do not have clean water. Oftentimes the people within those countries are unable to purchase clean water, or even to make this availability for consumption if they know where it is. The problems of poverty are not limited to clean water, but there are issues such as (i) sanitation, (ii) nutrition, (iii) proper housing, (iv) material deprivation, (v) lack of or poorer technology, information and education, (vi) the access to proper health care, and (vii) lower healthy life expectancy [13]. The reality of income buying health may be a rationale why economists, (Paul Streeten, Amartya Sen, Martin Ravallion and Ravi Kanbur, to name a few) over the years, have either used Gross Domestic Product per capita (GDP) to evaluate quality of life (or standard of living) or examine the association between poverty and well-being. Another reason is that wellbeing goes to the core of development.

Theoretical Framework
The paper's aim is to establish whether or not particular predisposed variables can be used to predict health status in Jamaica. Thus, the underpinning theoretical frameworks that guide this study is Smith and Kington's work [11], which is an expansion of the Grossman's model [10], Hambleton et al.'s study [12] and Bourne's model [14].

Grossman [10] established a standard economic model of health status, which is referred to as the 'health production function': -

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

Current Health in time t, H_t is a function of past health status, H_{t-1}, cost of medical care, (MC_t), G_o is family background and genetic endowments, B_t is the adoption of good personal health behaviours (exercise) and the avoidance of bad actions (such as smoking, excessive drinking of alcohol); ED is and vector of family education levels.

Smith and Kington furthered the work of Grossman in that in addition to the production function, they added a budget constraint and some other predisposed variables, which they provided as noted in the formula below:

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

Eq. [2], health enters their model in two ways,

creating a 'possible two-way feedback between health and income. Thus, 'good health' is as a result of people desire; and greater incomes allows for the purchase of more health. Therefore Eq. [2] expresses current health (H_t), as a function of cost of medical care MC_t, past prices and past incomes (P_o), education of each family member (ED), retirement-related income (R_t), asset income (A_t), family background and genetic endowments (G_o) and past stock of health (H_{t-1}). The modification were based on a research which was conducted in 1994 of some 6,052 households (n=8,223) of ages 70 or over. It should be noted that like Grossman, Smith and Kington used functional status as the operational definition for health. The functional status index (or dysfunctions index) is the summation of 11 questions that asked about ability to perform a series of activities. The index ranges from 0 to 100, where 0 denotes no limitation in any activity and higher scores mean worse functioning.

Bourne's study [14] used a similar approach like that taken by Smith and Kington. The predisposed variables that were used in Bourne's model are taken from Smith and Kingston, and other studies [11, 15-21]. Other studies will not be discussed throughout this paper, as their influence on the research was minimal. The primary similarity between Bourne's work [14] and that Smith and Kington's model [11] is the use of economic modeling.

Bourne expanded on the operational definition of health, and used economic model to establish determinant of well-being of elderly Jamaicans (ages 65+). It is one that combines functional status and economic resources to create a well-being index, which ranges from -2 to 14. The well-being index was created by:

$$W_i = \frac{1}{2}\left[\sum_{j=1}^{3} MR_{ji}\right] - \frac{1}{2}\left[\sum_{j=1}^{5} H_{ji}\right]$$

The well-being index of person i (W_i), is one-half of summing answers based on 5 health conditions, H_{ji} subtracted from one-half of the summation of three material economic resources (MR_{ji}) of person i. In addition, well-being (W_i) is The index ranges from a low of -1 to a high of 14. Scores from 0 to 3 denotes very low, 4 to 6 indicates low; 7 to 10 is moderate and 11 to 14 means high well-being.

From Bourne's study, the final model was as follows –

$$W_i = f (P_{mc}, ED, A_i, E_n, G, MS, AR, P, N, O, T, V) \quad [3]$$

W_i is well-being of the Jamaican elderly person i, is a function of cost of medical (health) care (P_{mc}), the educational level of the individual, elderly (A_i, where i is an individual elderly), the environment (E_n), gender of the respondents (G), union status (MS), area of residents (AR), positive affective conditions (P), negative affective conditions (N), average occupancy per room (O), property ownership, (T), and crime and victimization, (V). Unlike Smith and Kington, and Grossman's work, Bourne's work provided us with the degree of importance of all the variables in Eq. [3] – only the significant variables were used in this model. He found that of the 12 predisposed variables that were tested, 10 were found to be statistically significant (see Eq. [3]); with the model explaining 36.8% of the variation in well-being from those selected factors (F statistic=22.493, P value < 0.001). Of the 10 predictors of well-being identified in Eq. [3], the six most impacting on quality of life were as follows – (1) average occupancy per room (β= -0.270, i.e. crowding); (2) area of residence (β= 0.227); (3) cost of medical care (β= 0.184); (4) positive affective conditions (β= 0.138); (5) property ownership excluding a home (β= -0.135), and (6) age and negative affective conditions (β= - 0.129). The sample size for this study was 2,320 elderly people.

Another study that guides this paper is Hambleton et al.'s work [12]. In Hambleton and colleagues' study conducted between December 1999 and June 2000, of some 1,508 (out of a sample of 1,878) elderly respondents (ages 60 years and over), in Barbados the research offered a different perspective to that which was forwarded by Grossman [10], Smith and Kington [11], and Bourne [14]. Hambleton et al, using logistic regression, found that historical, current socioeconomic, lifestyle behaviour and current diseases accounted for 38.2% of the variation in self-reported health status. They reported that current diseases accounted for 33.5% of the total explained variation in health compared to lifestyle practices 7.1%, current socioeconomic conditions 4.1%, and historical factors 5.2% [12].

Like Grossman, and Smith and Kington, Hambleton et al., utilized self-reported health status in operationalizing health. Even though Hambleton et al's study did not identify an economic model like Bourne and the others, the principle was the same as he used logistic regression with which they could have written a model. What was new in their work? They included nutrition in childhood, health in childhood, household crowding, living alone, body mass index, waist circumference, and depression scale index.

Thus, the current study will test these two functions:

$$W_{Ai} = f (H_o, P_{mc}, ED, A_i, G, E_n, SS_i, MS, AR, P, O, N, HS_i, Ht_i, C, Y_i) \quad [4]$$

$$W_{Bi} = f (H_o, P_{mc}, ED, A_i, G, E_n, MS, AR, P, N, HS_i, Ht_i, F_i) \quad [5]$$

Eq. [4] is well-being (or quality of life) of individual i is a function of those predisposed variable. In this case, well-being is measured by functional status used through dysfunctions.

where H_o is the past dysfunctions, *cost of* medical care, P_{mc}, the educational level of the individual, ED, age, A_i, the environment E_n, gender of the respondents, G, union status (MS), house tenure (Ht), area of residents AR, positive affective conditions (P), negative affective conditions (N), household crowding – average occupancy per room (O), HS_i is person i seeking medical care, Crime, (C), and Y_i is income per capita of individual i (proxy consumption per capita) as well as SS_i denotes social status. Note: there is an inverse relation between increased dysfunctions and well-being.

On the other hand, in Eq. [5], wellbeing (or quality) of person i is a function of certain variables. The difference between Eqns. [4] and [5] is in the latter, where wellbeing is defined in terms of economic wellbeing (i.e. income), and dysfunctions of individual i, (F_i); H_o is consumption per capita when all other things are held constant. Note: from henceforth *Eq. [4] will be referred to as Well-being Model 4 and Eq. [5] is Well-being Model 5.*

Rationale for study

Within the context of Powell, Bourne and Waller's work [3], there seems to be social reality that many Jamaicans are not doing as well as some people would like to believe. Their study was based on a nationally representative survey of 1,338 respondents, which seeks to gather information on Jamaicans political culture as well as to collect particular observational data on sociological conditions such as wellbeing. The survey was conducted between July and August 2006 by the Centre for Leadership and Governance, Department of Government, the University of the West Indies at Mona. The research found that 42.5% (n=568) sample respondents were concerned about the possibility of being unemployed in the future, within the next 12 months; 61.5% (n=828) remarked that their salaries are unable to cover their expenses, 59.4% (n=795) said that most people cannot be trusted with 7.4% saying that you can trust the government, and approximately 20% of Jamaicans reported that current economic situation is either 'fairly bad' or 'very bad', we need to understand how various factors impact on the health status of the populace.

METHODS AND DATA

The research design for this study is an explanatory one. This study utilizes cross-sectional observational data taken from the Jamaica Survey of Livings Conditions (JSLC) 2002 in order to identify,

explain and **examining the Well-being of the Working Aged Population in Jamaica.** An extensive description of the sample design has been presented in other works [22-24]. The use of multivariate analysis to generate a model for the phenomenon clearly indicates a mathematical demographic approach. The surveyed population was 14,299 respondents ages 15 to 64 year, with a mean age of 34.06 years ± 13.48 years. Of the total surveyed population, 51.1% are females (n=7,310) compared to 48.9% males (n=6,989).

Well-being (i.e. functional status) W_{Ai}**:** Here wellbeing is conceptualized as functional status. This variable is created based on answers to ailments, diseases, injuries, accidents and other dysfunctions that result in functional status. The health index, using functional status is summing responses to all who answered to 5 health conditions questions. With regard to the ailments, from advanced to basic dysfunctions each was given equal weight. The ranges from 0 to 4, 0 is no limitation and higher scores indicate worse functioning. The final variable was a dummy value,

1=functional status, 0=no functional status (or dysfunctions).

Wellbeing (consumption per capita), W_{Bi}: The total amount which is expended on good and services divided by the number of person(s) within that dwelling unit.

RESULTS:
Sociodemographic Characteristics of Sample
The mean age of the sampled respondents (n=14,299) was 34.96 years ± 13.48 years, with the average age of both sexes being approximately the same (Table 1). Based on Table 1, on an average male's consumption is $6,019.20 more than that of their female counterparts, with the mode amount spent by male being 3 times compared to the most frequently amount spent by females ($12,637.73). Majority of the sampled population had a secondary level education, with approximately 2 times the number of females being educated at the post-secondary level.

Table 1: Socio-demographic Characteristics of Sampled Respondents, by Gender

	Male	**Female**
Area of residence:		
Rural areas	61.3%	56.7%
Other Towns	25.6%	27.6%
KMA	13.1%	15.7%
n	6989	7310
Education Level:		
Primary and below	13.4%	12.6%
Secondary	84.7%	79.3%
Tertiary	4.8%	8.0%
n	6006	6174
Age – mean (SD)	33.97 yrs (13.61 yrs.)	34.14 yrs (13.36yrs.)
Consumption per capita:		
mean (SD)	$84,962.67 ($90,497.55)	$78,943.47($98,620.13)
median	$59,806.61	$57,112.61
mode	$42,064.69	$12,637.73

Of the sampled population (14,299), the response rate for the cross tabulation between well-being (dysfunctions) and gender is 97.5%. Of the male respondents 87.8% of them reported no physical dysfunction. However, of the female respondents,

82.4% of them indicated that they had no ailment. Based on Table 2, more females reported a health condition in all dysfunctions category with the exception of one dysfunction.

Table 2: Well-being (functional status) of sample, by gender

Description	Gender	
	Male	Female
No. of health conditions		
Four condition	0.0	0.1
Three conditions	1.0	1.9
Two conditions	5.4	9.9
One conditions	5.7	5.7
No condition	87.8	82.4
Total (n)	6822	7115

In Table 3, self-reported health (dysfunctions or ailments) was mostly reported in the oldest age cohort (45 to 64 years), with the youngest age cohort reporting the least health conditions. The findings reveal that the older the population gets, dysfunctions increase with ageing. Another important finding was that the most self-reported health conditions were reported by the oldest age cohort (45 to 64 years); with 24.1 percent of them indicated that they were suffering from at least one dysfunction over the last 4-weeks. We found that people who indicated that they were affected by 2-health condition were at least 2 times the number of any other age cohort (see Table 3).

Table 3: Well-being (Functional status caused by dysfunctions), by Age Cohort

Detail			AGE COHORT			
			15 – 24yrs	25 - 34 yrs	35 – 44yrs	45 – 64yrs
Number of Health Conditions		4	%	%	%	%
			0.0	0.1	0.0	0.2
		3	0.7	1.6	1.5	2.4
		2	4.1	5.7	6.8	15.0
		1	3.7	6.4	7.0	6.5
		0	91.5	86.3	84.8	75.9
n			4190	3415	2986	3346

RESULTS
The Multivariate Analysis
The initial hypothesis (or function) that we tested for wellbeing (i.e. dysfunctions) is Eqn. [4.1]:

$$W_{Ai} = f (H_o, P_{mc}, ED, A_i, G_i, E_n, SS_i, MS, AR, P, N, O, HS_i, C, Ht_i, Y_i)\ldots\ldots..Eqn. [4.1]$$

Using the principle of parsimony, only those variables that are statistically significant (i.e. P value < 0.05) will be used in the final model. Based on Table 4, we have derived a final model as follows:

$$W_{Ai} = f (H_o, MS_i, Ht_i, SS_i, AR, P, N, O, G_i, HS_i, C, Y_i, A_i)\ldots\ldots\ldots Eqn. [4.2]$$

Table 4: Logistic regression showing the association between predisposed variables and wellbeing (dysfunctions) – *Well-being Model 4*

	B	Std. Error	Wald statistic	P value	Odds ratio
Union status					
Married	-0.125	0.077	2.627	0.105	0.882
Common-law	-0.268	0.085	10.022	0.002	0.765
Visiting	-0.358	0.095	14.240	<0.0001	0.699
Divorced	0.103	0.112	0.854	0.355	1.109
Reference: (Single)					
House tenure					
House tenure (1=own)	-0.271	0.102	7.084	0.008	0.763
House tenure (1=rent)	-0.102	0.078	1.682	0.195	0.903
Reference: (Squatting)					
Area of residence					
Semi-urban	-0.133	0.070	3.634	0.057	0.875
Urban	-0.013	0.087	0.023	0.880	0.987
Reference: (Rural)					
Health seeking behaviour	2.957	0.106	780.414	<0.0001	19.237
Environmental conditions	-0.083	0.061	1.809	0.179	0.921
Educational level					
Secondary schooling	-0.082	0.086	0.909	0.340	0.922
Tertiary schooling	-0.106	0.141	0.563	0.453	0.899
Reference: (primary schooling)					
Social Support	0.155	0.058	7.227	0.007	1.168
Gender (1=male)	-0.424	0.058	52.833	<0.0001	0.655
Household Crowding	-0.047	0.026	3.273	0.070	0.954
Crime	0.010	0.003	9.686	0.002	1.010
Psychological Conditions:					
Negative Affective	0.051	0.009	32.448	<0.0001	1.052
Positive Affective	-0.057	0.012	20.560	<0.0001	0.945
Age	0.027	0.003	100.137	<0.0001	1.027
Consumption	0.000	0.000	53.155	<0.0001	1.000
Constant	-2.635	0.193	185.694	<0.0001	0.072

Equation [4.2] was another hypothesis that we tested in order to arrive at a final model. Using the principle of parsimony (i.e. only those variables which are statistically significant will be used in the final model), based on Table 5, the final model for well-being (i.e. consumption per capita) is Eqn. [5.2]:

$$W_{Bi} = f\ (H_o, P_{mc,}\ ED, G, E_n, MS, AR, P, N, A_i)\dots\dots\dots\dots\dots\dots\dots\dots.Eqn.\ [5.2]$$

Table 5: Results of linear regression analysis showing the association between predisposed variables and consumption per capita (log transformed) – *Well-being Model 5*

Predictors:	Dependent variable: Health (using per capita consumption)				
	B value	β coefficient	95% CI		P value
			Lower bound	Upper bound	
Constant	10.542		10.165	10.919	
Union Status:					
Married	0.040	0.024	-0.066	0.145	0.459
Common law	0.129	0.065	0.011	0.247	0.033
Visiting	0.069	0.028	-0.074	0.212	0.344
Divorce	-0.193	-0.063	-0.362	-0.023	0.026
Single (reference)					
Functional status***	-0.036	-0.024	-0.112	0.041	0.360
Physical environment	-0.205	-0.123	-0.292	-0.118	<0.0001
Seeking medical care	0.043	0.027	-0.039	0.125	0.308
Area of residence:					
Other Towns	0.270	0.148	0.173	0.366	<0.0001
KMA	0.445	0.190	0.319	0.570	<0.0001
Rural area (reference)					
Educational level:					
Secondary	0.059	0.035	-0.049	0.167	0.281
Tertiary	0.464	0.139	0.267	0.661	<0.0001
Primary (reference)					
Social support*	0.004	0.002	-0.077	0.085	0.929
Gender (1=male)	0.115	0.070	0.030	0.201	0.008
Logged household crowding	-0.490	-0.422	-0.557	-0.423	<0.0001
Logged cost of medical care	0.083	0.142	0.052	0.114	<0.0001
Psychological conditions:					
Negative affective	-0.016	-0.066	-0.029	-0.003	0.018
Positive affective	0.030	0.091	0.012	0.048	0.001
Age	-0.004	-0.065	-0.008	0.0001	0.057
N=960					
R = 0.625; R^2 = 0.391; Adjusted R^2 = 0.379					
F [18,911] = 32.46, $P \leq 0.001$					

* Social support is dummy variable, 1=living with other people in the household, 0=otherwise
*** Functional status is a dummy value, 1=reported dysfunction(s), 0= reported no dysfunction(s)

DISCUSSION

For centuries, Western medicine has been emphasizing dysfunctions as the primary cause for functional status, ill-health or 'poor' well-being (or low quality of life). Owing to this unidirectional focus of health, health care practitioners predominantly have been treating the outcome instead of taking a multidimensional approach to health care. Based on the WHO's definition of health, which incorporate biological factors, socioeconomic, psychological and environmental conditions as agents of health or well-being, a unidirectional approach to health and/or health-care is minimization [25]. Dr. George Engel, a psychiatrist, argued that doctors should not treat mental patients only for the biological conditions as the human body is influenced by biological, psychosocial and environmental conditions [26-28]. He, like Amartya Sen, believed that we should address the *means* or the inputs instead of the *ends* or the outcome, which in this case is the dysfunction. Can psychosocial and

ecological conditions impact on dysfunctions, or consumption per capita?

Using the working aged population, this study evaluates psychosocial and environmental factors on two distinct measure of wellbeing. Two models were used to established the likely impact of the aforementioned factors (i.e., Model 4 and 5). There will be a few alterations to factors depending on the Model that will be used to test the hypothesis. In Model 4, well-being is operationalized as either having a physical dysfunction or having more than one health conditions, which will reduce dysfunctions or cause functional status. In this case, reduced dysfunctions means increased well-being. Model 5, on the other hand, captures consumption per capita as the operational definition for well-being. Whereas Model 4 is a subjective measure of well-being (or ill-health), Model 5 is an objective assessment of individual well-being. It should be noted here that the final model excludes all the variables which are not significant, because they have contribution to the overall explanation.

Based on *Model 4*
$$W_{Ai} = f (H_o, MR_i, Ht_i, SS_i, AR, P, N, O, G_i, HS_i, C, Y_i)$$

Model 4 explains 21.6% of the variance in well-being. Union status, house tenure, health care seeking behaviour, social support, gender, crime, negative and positive psychological conditions, age and consumption per capita were found to be predictors of well-being (proxy dysfunctions). The six most influential factors in descending order were; health care seeking behaviour (Wald statistic = 780.414, $P \leq$ 0.001); age of respondents (Wald statistic = 100.137, $P \leq$ 0.001); consumption per capita (Wald statistic = 53.155, $P \leq 0.001$), gender (Wald statistic = 52.833, $P \leq$ 0.001); negative affective conditions (Wald statistic = 32.448, $P \leq 0.001$), and positive affective conditions (Wald statistic = 20.560, $P \leq 0.001$). An important finding in this paper is that income per capita (proxy consumption per capita) is a predictor of well-being, but a change in income per capita does not change the odds of well-being (B=0.000, $P \leq 0.001$).

The older people get, their dysfunctions will increase by 1.03 times. Based on Odds ratio= 19.24 for health care seeking behaviour, people who seek health care are 19 times more likely to increase their well-being compared to those who do not. With regards to the gender of the respondents, males have lower dysfunctions than their female counterparts (Odds ratio= 0.66).

There are some interesting results from observational data in regard to union status. Although union status is statistically significant, the comparisons

are between common law and dysfunctions (Wald statistic =10.022, $P \leq 0.05$) with single being the reference group, and visiting union and well-being (Wald statistic =14.240, $P \leq 0.001$) with single being the referent group. The observational data reveals that being in a common-law relationship reduces ones well-being (Odds ratio= 0.77, with reference to those in single union. Those who are in visiting relationships have lower dysfunctions than those in single relationship (Odds ratio= 0.7).

Based on the observational data, house tenure was statistically related to dysfunctions. However, the predictor was between only those people who own their own house with reference to those who squatted. The observational data revealed that those who owned their homes had reduced well-being, with reference to squatters (Odds ratio= 0.763). Statistically, there is no difference in the dysfunctions of someone who pays rent compared to another who does not.

From Model 4, the observational data revealed that social support is a predictor of well-being (Wald statistic =7.227, $P \leq 0.001$). A positive B value of 0.155 indicates that having social support increases ones well-being. Furthermore, someone who has social support their wellbeing is 1.168 times higher compared to another who does not.

Another important finding within this model is that there is no relation between well-being and educational attainment of the individual. Hence, college attendance does not impact ones well-being, if well-being is conceptualized using dysfunctions. Given that Model 4's operational definition of well-being is dysfunctions, the observational data show that some who is experiencing negative affective conditions is 1.1 times more likely to have dysfunctions compared to someone who is not. On the contrary, an individual who is experiencing positive affective conditions will see a reduction in dysfunctions (Odds ratio= 0.94, with a B= -0.057). Is there any difference between the predictors in Model 4 and that of Model 5?

Based on Model 5 -
$$W_{Bi} = f (H_o, P_{mc}, ED, G, E_n, MS, AR, P, N, A_i)$$

The primary finding of Model 5 is - using individual income per capita (i.e. proxy individual consumption per capita) – that the model explains 39.1% of the variance in well-being. Model 5 explains 17.5% more of what constitute well-being than Model 4. This means that it is better to operationalized well-being from an objective perspective than using self-reported dysfunctions.

Some additional results from Model 5 will be presented hereafter. The most influential factor using Model 5 is household crowding (β= -0.422, $P \leq 0.001$).

The six most influential factors of well-being using Model 5 are as follows: household crowding (i.e. average occupancy per room) (β= -0.422); area of residence (β= 0.190 or 0.148, $P \leq 0.001$); cost of medical care (β= 0.142, $P \leq 0.001$); college education (β= 0.139, $P \leq 0.001$); environment (β= -00.123, $P \leq 0.001$) and positive affective conditions (β= 0.091, $P \leq 0.001$). Based on the negative value for some of the Bs, it follows that there is an inverse relation between household crowding (proxy consumption per capita), and the environment and well-being. With regard to Model 5, unlike Model 4, post-secondary education - with reference to primary education and below - is 'good' for well-being (β= 0.139, $P \leq 0.001$). Although dysfunctions result in functional status, it does affect well-being for the working aged populace in Jamaica (β= -0.024, $P \leq 0.360$), when well-being is operationalized as income (i.e. proxy consumption per capita).

CONCLUDING DISCUSSION

Dysfunctions are commonly used to evaluate health, functional status and/or well-being in Western societies, which is profoundly highlighted in work of Ali, Christian and Chung [29]. Thus, medical disorders (diseases or health conditions) are the primary reasons why many people seek health care. This behaviour emphasizes the end (i.e. the ailment) instead of what explains the outcome, which is preventative care. In our contemporary world, health and/or well-being are popularized by the pharmaceutical industry and it focuses on ill-health. This study has shown that functional status is indeed influenced by psychosocial and ecological conditions, which is also the case when health or well-being is measure using consumption per capita. We are cognizant that people may (or may not) under-report their consumption or inaccuracies due to recall. However, from Model 5, it is still a better proxy of well-being from the explanatory powers of the indicators than using self-reported dysfunctions. Self-reported dysfunctions suffers from the same limitations as consumptions, and so our emphasis on diseases (or self-reported dysfunctions) when its predictive capacity is narrower than consumption per capita cannot be the way to go in understanding health or health care. This is within the context that quality of life (or wellbeing or health) is influenced by biological, psychosocial and environmental conditions [2, 11, 14, 30].

Thus, the treatment of patient care should not be solely addressed from a biological perspective. It should be seen as a multidimensional approach that include socioeconomic, psychological, and ecological conditions in additional to dysfunctions. This is a better approach as it is greater in depth. The current study has shown that the use of particular predisposed variables to examine self-reported dysfunctions has a lower predictive power than if well-being were conceptualized from an objective approach (i.e. using consumption per capita). Although income is a predictor of well-being, the current work shows that increased income means a change in the odds of well-being.

A key finding of this study is – using dysfunctions to measure well-being (or health) - offers less of an explanation of well-being than if we were to use income. This was evident in the difference between the explanatory power of Model 4 or Model 5. The latter Model explains 39.1% of the variance in well-being compared to the former Model that only explains 21.6%, which is a difference of 17.5%.

In concluding, whether or not self-reported dysfunctions or consumption per capita is used to conceptualized well-being (or health), the current study has shown that socioeconomic, psychological and ecological conditions affect well-being. The paper does not claim to provide all the answers, but it is a start in the understanding of how well-being should be conceptualized, measured, and treated from here onwards. We are forwarding that health should not be limited to consumption as this excludes physical conditions of the individual or nor should it be narrowly defined as dysfunctions as this process focuses only on the end (i.e., the dysfunctions) and avoids the many indicators that contribute to overall wellbeing.

Limitations

This work has one limitation, the use of secondary data to examine a phenomenon. The primary data were not collected for the current purpose. This dataset did not examine self-reported happiness, life satisfaction or health (i.e., Likert scale response to general health status) and so this is a major limitation for this study; but it can provide insights into the matter despite this limitation.

Conflict of interest

For this study, the authors would like to declare that there is no conflict of interest to report.

Disclaimer

The researchers would like to note that while this study used secondary data from the Jamaica Survey of Living Conditions, any of the errors in this paper should be ascribed to the Planning Institute of Jamaica (PIOJ) or the Statistical Institute of Jamaica (STATIN), but to the researchers.

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