

# Health measurement

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## ABSTRACT

Jamaicans are not atypical in how they conceptualize health and/or how they address patient care as the antithesis of diseases or dysfunctions (*i.e.* health conditions). In the 1900s and earlier, Western Societies were using the biomedical model in the measurement and treatment of health, health attitudes and the utilization of health services. This approach emphasizes sickness, dysfunction, and the identification of symptomology or medical disorders to evaluate health and health care. Such an approach places significance on the end (*i.e.* genetic and physical conditions), instead of the multiplicity of factors that are likely to result in the existing state, or issues outside of the space of dysfunctions. Notwithstanding the limitations of the biomedical approach, it is still practiced by many Caribbean societies, and this is fundamentally the case in Jamaica. The current paper is an examination of health measurement, and provides at the same time a rationale for the need to have a more representative model as opposed to the one-dimensional approach of using pathogens in measuring health. Owing to the importance of health in development, patient care and its significance for other areas in society, this paper seeks to broaden more than just the construct, as it goes to the core of modern societies in helping them to understand the constitution of health and how patient care should be treated. Thus, it provides a platform for the adoption of the biopsychosocial model, which integrates biological, social, cultural, psychological and environmental conditions in the assessment of health and the outcome of research, by using observational survey data.

**Keywords:** Health; Biomedical Model; Biopsychosocial Model; Determinants; Antithesis of Diseases; Health Measurement; Jamaica

## 1. INTRODUCTION

The construct of health is more than a concept. It is a “leading characteristic of the members of a population...” [1] and, ergo, it plays a direct role in the images of health and health care. Among the plethora of reasons for the importance of health are not merely the images created by the construct, but also its contribution to the production of different tenets of human existence—illness, morbidity, comorbidity, disability, mortality, life expectancy, wellbeing, and so on, as well as the guide that it affords for health interactions and interventions. In addition to the aforementioned issues, it is of germane significance in aiding us to understand many of the things that we see. The definition of this single term “health” is important, as a precise use of the construct fashions and connects other important applications such as growth and development, productivity, health care and people’s expectations of health care professionals. One scholar, in helping us to understand the meaning of a construct, says that “without a well-defined construct, it is difficult to write good terms and to derive hypotheses for validation purposes” [2]. Embedded in Spector’s argument is the “theoretical abstraction” of the construct, and how we may use it for outcome research. In this paper, the author will review the existing literature and identify particular measures of health, examining how these differ from the WHO’s conceptual definition of health [3]. At the same time, within the limitations of the biomedical model, the study will evaluate the usefulness of the biopsychosocial model in health and how the image of health influences the health care of people.

### 1.1. Image of Health

Health, however, is more than a “theoretical abstraction”. There is an “objective reality” to this construct. It explains life, and life is an objective reality. Furthermore, health is a valuable tool that “drives” health policies and influences the determinants of health care. Then there is the issue of health care and how this is planned for, as well as the role that health plays in the development of a society. Health, wellbeing and poverty are well documented in developmental economics by scholars such as

Amartya Sen, Paul Streeten and Martin Ravallion as having critical roles in understanding human development (or the lack of it). The fascination with health and wellbeing in developmental studies is primarily because of the direct association between development and health.

Jamaica is not atypical in how its people conceptualize health and/or how they address patient care. In the 1900s and earlier, western societies used the biomedical approach in the measurement and treatment of health [5]. The biomedical approach emphasizes sickness, dysfunction, pathogens, and disability and medical disorders in the construction of health. This approach places importance on the outcome (or the end) instead of the multi-dimensional conditions that are likely to result in the existing state. Notwithstanding the limitations of the biomedical approach, it is still practiced by many Caribbean societies, and this is fundamentally the case in Jamaica. This is atypical in many Western nations, as contemporary demographers still use the antithesis of illness and disability to write about health [6-8]. Rowland wrote that "Measures of population health are of general interest to demographers, sociologists, geographers and epidemiologists. Interdisciplinary concerns here include comparing national progress through the epidemiologic transition, and identifying social and spatial variations within countries in patterns of disease and mortality [5].

The United States has left many Caribbean societies behind in how they conceptualize health and treat health care. As early as the commencement of the 20<sup>th</sup> century [4], the United States shifted their focus from negative wellbeing (*i.e.* antithesis of diseases) to positive wellbeing. The antithesis of diseases assumes a bipolar opposite between health and diseases. Embedded in this bipolar thinking is that for one to be healthy, he/she must not be experiencing any symptomology of dysfunctions. Hence, the health of people is measured by mortality or morbidity statistics. Health, however, is more than just the antithesis of diseases to positive psychology, inclusive of socio-cultural conditions and the environment. Positive wellbeing encapsulates the biomedical model in addition to psychological, socio-cultural and environmental conditions. The name that Engel gave to this new approach is the biopsychosocial model. The current paper is a discourse on the limitation of the biomedical model, which will provide a rationale for the need to have a more representative model as against this one-dimensional approach to the measurement of health.

Traditionally, health was conceptualised as the "antithesis of diseases" [4]. Using the antithesis of diseases, this construct utilizes a minimization approach or a negative perspective, adopted by western societies, which saw health as the absence of dysfunctions, morbidity conditions or comorbidity. "This definition of health has been largely the result of the domination of the biomedical sciences by a mechanistic conception of

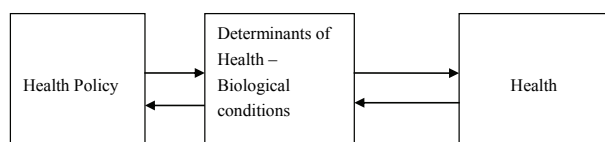
man. Man is viewed by physicians primarily as a physiochemical system" [9]. With this thinking, health professionals' evaluation of patient care and diagnostic treatments is based primarily on the identification of any symptomology of dysfunctions. Hence the standard that is used in the evaluation of health is the established norm of any deviation from diseases. Rather than conceptualizing health and stating its determinants, this approach uses the identification of symptomology to measure health. Therefore, life expectancy is used here as a measure of health. This assumes that once an individual is alive, it is because there are no dysfunctions to cause death. Embedded in this association is the influence of dysfunctions on health, but there are no other determinants of health except the various symptomologies of diseases.

Outside of diseases, there are other determinants of health. Based on the biopsychosocial model that George Engel [10,11] developed, he proposed an approach to the treatment of the health care of psychiatric patients that included biological, social and psychological conditions. Such a conceptual framework, unlike the biomedical sciences, introduces and identifies factors that are responsible for the health, and by extension the wellbeing, of a population. One scholar cites that "the states of health and disease are the expressions of the success or failure experienced by the organism in its efforts to respond adaptively to environmental changes" [12]. Again, when health is defined as the antithesis of diseases its determinant is solely biological, but this is clearly one-dimensional, and many scholars have shown that health is, in fact, multidimensional, and composed of biopsychosocial and environmental conditions.

Another aspect to health is the positive association between the determinants of health and health care policies. Health care policy makers use the determinants of health as the benchmark that directs their planning. Therefore, when health policies are too narrow, the health determinants which fashion a population's health care will take a minimal approach, as this is based on the image of health. One scholar puts it succinctly, "...health policies affect health through their effects on health determinants" [13], which speaks to the importance of "good" hypotheses in the schema of things. It should be noted that the hypotheses allow us to derive the possible determinants of health, which would be used to evaluate the effectiveness of the health policy, and so show how they affect health (see **Figure 1**).

The goal of the policy is to decrease the incidence of chronic diseases, high risk sexual behaviour/violence and injury through the adaptation of appropriate behaviours by the population and particularly young children, adolescents and young adults [14].

The general conceptualization of health in Jamaica is the "antithesis of diseases". This explains why many people emphasize health care for morbidity conditions,



**Figure 1.** The relation between health policy and health, and the roles of health determinants.

genetics, or physical functioning (*i.e.* their biology). Another indicator of the usage of this perspective can be seen in how data are collected on health in Jamaica and/or in the wider Caribbean. Such a situation highlights the minimization or substantially negative approach in the construct of health. Despite the title of the Ministry of Health's "National Policy for the Promotion of Healthy Lifestyle in Jamaica", throughout the paper the MOH [14] emphasizes mortality, diseases, dysfunctions and reproductive health, which highlights Jamaicans' perspective on health. This is also evident in the Planning Institute of Jamaica which is responsible for policy, along with the Statistical Institute of Jamaica, collecting information on health by way of 1) preventative (*i.e.* behaviour modification), curative (surgical procedures, visits to health practitioners), restorative (physical rehabilitation), and palliative (*i.e.* pain management) measures, and ownership of health insurance. Thus, the hypotheses that arise from the collected data are in keeping with the narrowed definition for which the data was initially gathered by the research design exercise. The hypothesis of the presence of pathogens such as poor air being the cause of diseases, or classification of ill-health, is ancient, within the context that health has been expanding from mere physical functioning for some time. This hypothesis assumes that a person who does not have an ailment (or disease condition) is healthy, which is categorically false, as health psychologists have shown that psychological conditions do influence wellbeing [4]. This perspective dates back to Galen in Ancient Rome (*i.e.* 130 CE-200 CE). A point is even more forcefully made in a study by two economists, which found a strong direct relationship between happiness and wellbeing [15]. Other researchers found an association between "positive and/or negative" mood(s) and wellbeing [16]. This paper is in two parts, designed: 1) to provide detailed evidence that will support the rationale for an expanded concept which looks at health and wellbeing; and 2) to illustrate the purpose and significance of the expanded model that Engel termed the biopsychosocial model. This paper however is not arguing for a biopsychosocial hybrid model, which would include biological, economic, social, cultural, psychological and ecological conditions.

## 2. PHYSICAL FUNCTIONING

Caring for patients suffering from ill-health has a long

history, which dates back to the Agrarian societies. During those earlier periods, man in his quest to address health conditions did so primarily from the standpoint of physical functionality. Based on the annals of time, the literature showed that people would treat biological dysfunctions and sometimes the "spirit" in their pursuit of making man healthier. This approach dates back as far as ancient Rome (*i.e.* 130 CE-200 CE). Despite the WHO offering us a better way in the pursuit of happiness and wellness, man continues to return to the biomedical model of health. One of the reasons for the continued acceptance of the use of the biomedical model is the dominance of technology in this process. As technology is still primarily intended to address physical dysfunctions and the absence of pathogens, many studies conducted in early societies have not only linked the concept of health to medical conditions and by extension health care, but have served as another important indicator in determining lifespan.

In 1884, an Englishman named Francis Galton who was both a mathematician and medical doctor researched the "physical and mental functioning" of some 9,000 people between the ages of 5 and 80 years [17]. Galton wanted to measure the human life span in relation to the physical and mental functioning of people, so he sponsored a health exhibition that would allow him to collect data for analysis. Health was traditionally defined as the "antithesis of diseases", which explains the predominance of physical functioning in policy making and health care, and justifies Galton's wanting data on the physical functioning of people.

The 20<sup>th</sup> century has brought with it massive changes in the typologies of dysfunctions, where deaths have shifted from infectious diseases such as tuberculosis, pneumonia, yellow fever, Black Death (*i.e.* Bubonic Plague), smallpox and "diphtheria" to illnesses such as cancer, heart disease and diabetes [14]. Although diseases have shifted from infectious to degenerate, chronic non-communicable illnesses and science, medicine and technology have expanded since then, and the image of health in contemporary Jamaica still lags behind many developed nations. Morrison [18] titled an article "Diabetes and Hypertension: Twin Trouble" in which he establishes that diabetes mellitus and hypertension have now become problems in Jamaicans and in the wider Caribbean. This situation was equally corroborated by Callender [19] and Steingo [20] at the 6<sup>th</sup> International Diabetes and Hypertension Conference, which was held in Jamaica in March 2000. They found that there is a positive association between diabetic and hypertensive patients—50% of individuals with diabetes had a history of hypertension [19,20]. Prior to those scholars' work, Eldemire [21] found that 34.8% of new cases of diabetes and 39.6% of hypertension were associated with senior citizens (*i.e.* ages 60 and over). Accompanying this period of the "age of degenerative and man-made ill-

nesses” are life expectancies that now exceed 50 years.

Before the establishment of the American Gerontology Association in the 1930s and their many scientific studies on the ageing process [17], many studies were done based on the biomedical model, *i.e.* physical functioning or illness and/or disease-causing organisms [4]. Many official publications used either reported illnesses or the prevalence of seeking medical care for measuring sicknesses. Some scholars have still not moved to the post biomedical predictors of health status. The dominance of this approach is so strong and present within the twenty-first century, that many doctors are still treating illnesses and sicknesses without an understanding of the psychosocial and economic conditions of their patients. To illustrate this more vividly, the researcher will quote a sentiment expressed by a medical doctor in The Caribbean Food and Nutrition Institute’s Quarterly [22]. A public health nutritionist, Dr. Kornelia Buzina [23], says, “When used appropriately, drugs may be the single most important intervention in the care of an older patient ... and may even endanger the health of an older patient ...” This proposition highlights the paradox in biomedical sciences as well as showing the need to expand the image of health beyond this negative approach to it.

Within the context of the WHO’s definition and growing numbers of studies that have concluded that health should be a multidimensional construct, in 2007 a group of medical practitioners used physical functionality and dysfunctions to treat an elderly patient who was suffering from a particular health condition [24]. The researchers put forward an examination of a 74-year old man who with “...a long history of ischaemic heart disease, presented with increasingly prolonged episodes of altered consciousness” [24]. The physicians cite the argument that “many elderly patients may have more than one cause for this symptom” [24], which summarizes their perspective and reliance on understanding medical disorders in the dispensing of patient care. Throughout the study, the scholars and medical practitioners did not seek to evaluate the psychological, social, and environmental conditions and their possible influence on the current state of dysfunction of the elderly patient. Despite the seeming complexity of the result of the detailed inquiry into the neurological conditions of the patient, and the keen medical examination of the patient, his medical condition continued for years unabated. This emphasises the dominance of the biomedical model, and it goes beyond this single study, as a review of publications in the West Indian Medical Journal—a medical journal in Jamaica—from 1960-2009 revealed a few studies that have gone beyond the use of the biomedical approach to the examination of patient care.

In seeking to treat the 74-year old patient, the medical practitioners examined and re-evaluated various medical problems. Thus, owing to the thinking of this group of

researchers, they used “multiple medications” in the treatment of the patient’s condition. It was clear from the perspective of the scholars that what guided their intervention were the biomedical sciences (*i.e.* physical functionality or dysfunctions). In this case, health is the “antithesis of diseases”. It is the narrow definition of health—negative health (*i.e.* biomedical approach)—which explains the image of health and health care for those scholars and researchers. Apart from the reasons for the use of diagnosed conditions, life expectancy and other physical issues are utilized in examining health, because of the precision in using them to evaluate health as against other approaches that are more holistic and broader in scope.

## 2.1. Health Measurement

The narrow definition of health is the “antithesis of diseases” which Longest [13] says is the “...absence of infection or the shrinking of a tumour” which can be called dysfunctions (see [1,4]. As we mentioned earlier, the “antithesis of diseases” idea dates back to Galen in Ancient Rome. It was widespread in the 1900s, and so medical professionals used this operational definition in patient care. Another fact during this time was that technology was fashioned in this regard, addressing solely physical dysfunctions. This definitional limitation may be a rationale for the World Health Organization, nearing the mid-1900s, declaring that health is the “state of complete physical, mental, and social wellbeing, and not merely the absence of diseases or infirmity” [3]. It should be noted that this conceptual definition which is in the Preamble to the constitution of the WHO which was signed in July 1946 and became functional in 1948, according to one scholar, from the Centre of Population and Development studies at Harvard University, is a mouthful of sweeping generalizations. According to Bok [25], the definition offered by the WHO is too broad and difficult to measure, and at best it is a phantom. Other intelligentsia point to the WHO’s definition as a difficulty for policy formulation, because its scope is “too broad” [26]. The question is “Is the conceptual definition formulated by WHO so broad that those policies faced difficulty in formation”, and by extension should we regress to a pre-1946 conceptualization of health because a construct is difficult to operationalize today? Undoubtedly, health extends beyond diseases and is tied to cultural and psychological elements, personal responsibility, lifestyle, environmental and economic influences as well as quality nutrition [27-41]. Those conditions are termed determinants of health [26].

The WHO’s perspective must have stimulated Dr. George Engel to pursue a modification of the narrow approach to the health and health care debate. Dr. Engel was a psychiatrist who formulated the construct called the biopsychosocial model in the 1950s. He believed that



when a patient comes to a doctor, for example for a mental disorder, the problem is a symptom not only of actual sickness (biomedical), but also of social and psychological conditions [10,11]. He therefore campaigned for years for physicians to use the biopsychosocial model for the treatment of patients' complaints, as there is an interrelationship between the mind, the body and the environment. He believed so deeply in the model, convinced that it would help in understanding sickness and providing healing, that he introduced it into the curriculum of Rochester medical school [42,43]. Medical psychology and psychopathology was the course that Engel introduced into the curriculum for first year medical students at the University of Rochester. This approach to the study and practice of medicine was a paradigm shift from the biomedical model that was popular in the 1980s and 1990s.

The Planning Institute of Jamaica and the Statistical Institute of Jamaica employ the biomedical model in capturing the health status and/or wellbeing of the populace. This approach was obsolete by the late 20<sup>th</sup> century, as in 1939 Cowdy, E.V. a cytologist in the United States; expanded on how ageing and health status should be studied in the future. Cowdy broadened the biomedical model in the measurement of the health status of older adults by including social, psychological and psychiatric information in his study entitled the "Problem of Ageing" [17]. The Ministry of Health [MOH] [14], however, has published a document in which it shows that health interfaces with biomedical, social and environmental conditions. One of the reasons put forward by the MOH to help in understanding why they arrived at the aforementioned position, was the rationale behind the explanation for the changes in the typology of diseases – that is, from infectious and communicable diseases to chronic conditions. The institution cites that this is substantially because of the lifestyle practices of Jamaicans. One of the ironies within the document was in the "main components of the policy for the promotion of a healthy lifestyle in Jamaica", which cites that the goal of the policy was to reduce the incidence of communicable and infectious diseases, which speaks to society's subconscious emphasis on the biomedical model in conceptualizing health and its treatment. Embedded within the MOH's 2004 publication are repetition and the focus on seeking to reduce physiological conditions that affect the individual. The MOH admits, however, that health interfaces with body and environment, which is an expansion of the biomedical model, but all indications in their document point to the biomedical science approach in the application of the policy. The institution recognized that psychological factors (for example, self-esteem, and resilience) play a role in influencing health, so much so that it included these within its "goal of the strategic approach", but they were not supported in the "broad

objectives of the strategic approach".

Critical to all of this is the acceptance that the definition of health is fundamental to the construction of those hypotheses that are used to formulate health policies. According to Longest [13], the conceptualization of health is indeed critical to all the things that rely on its definition. Longest writes:

The way in which health is conceptualized or defined in any society is important because it reflects the society's values regarding health and how far the society might be willing to go in aiding and supporting the pursuit of health among its members [13].

In Jamaica health policies are still driven by physical functioning, which is an obsolete approach to addressing health and by extension wellbeing. This limited approach to health and wellbeing means that little consideration is given to other factors such as lifestyle, psychological state, the environment, crime and violence, among others. This of course implies that Jamaica's health policy is limited in its orientation, as it is largely driven by hypotheses that support physical functioning.

## 2.2. Biopsychosocial Approach

Dr. Buzina admits that wellbeing is fundamentally a biomedical process [23]. This conceptual framework derives from the Newtonian approach of basic science as the only mechanism that could garner information, and empiricism being the only apparatus to establish truth or fact. It is still a practice and social construction that numerous scholars and medical practitioners [24] continue to advocate despite new findings. Simply put, many scholarships still put forward a perspective that the absence of physical dysfunction is synonymous with wellbeing (or health, or wellness). Such a viewpoint appears to hold some dominance in contemporary societies, and this is a widespread image held in Jamaica. Then there are issues such as the death of an elderly person's life-long partner; a senior citizen taking care of his/her son/daughter who has HIV/AIDS; an aged person not being able to afford his/her material needs; someone older than 64 years who has been a victim of crime and violence and continues to be a victim; seniors who reside in volatile areas who live with a fear of the worst happening, the inactive aged, and generally those who have retired with no social support, are equally sharing the same health status as the elderly who have not been on medication because they are not suffering from biomedical conditions to the extent that they need to be given drugs.

Two medical doctors writing in Kaplan and Saddock's Synopsis of Psychiatry noted that physicians are frequently caught in theorizing that normality is a state of health [44]. They argued that doctors' definition of normality correlates with a traditional model (biomedical) that emphasizes observable signs and symptoms. Using

psychoanalytic theories, Saddock and Saddock [44] remarked that the absence of symptoms as a single factor is not sufficient for a comprehensive outlook on normality. They stated, "Accordingly, most psychoanalysts view a capacity for work and enjoyment as indicating normality..." [44]. Among the challenges associated with this method (biomedical model), is its emphasis only on curative care. Such an approach discounts the importance of lifestyle and preventative care. In that, health is measured based on experiences with illnesses and/or ailments, with limited recognition being placed on approaches that militate against sickness and/or diseases. The biomedical approach is somewhat biased against an understanding of multi-dimensional man, which is not in keeping with the holistic conceptualization of health as offered by the WHO.

### 2.3. Biopsychosocial Approach

In the 1950s, George Engel, a physician, teamed with John Romano, a young psychiatrist, to develop a biopsychosocial model for inclusion in the curriculum of the University of Cincinnati College of Medicine, which measured the health status of people. It is referred to as Engel's biopsychosocial model. Engel's biopsychosocial model [10,11,43], recognized that psychological and social factors coexisted along with biological factors. It was a general theory of illness and healing, a synergy between medicine, psychiatry and the behavioural sciences [42]. Therefore, from Engel's model, wellbeing must include factors such as motivation, depression (or the lack thereof), biological conditions (such as illnesses and diseases), social systems, cultural, environmental and familial influences on the appearance and occurrence of illness.

Some scholars may argue that this paper appears to believe that only quantitative studies may provide answers to the examination of the determinants of health. This is absolutely not so, and we use a qualitative study to show people's perception of what contributes to a particular medical condition. In a qualitative study that uses in-depth interviews with some 17 Malaysian men aged between 40 and 75 years old, some scholars examined the perception of these men in relation to erectile dysfunction (ED)—the sample was a convenient one of men who were suffering from ED and who were willing to speak about their condition. When the interviewers asked the participants about the possible causes of ED, many of them outlined biomedical conditions such as diabetes, hypertension, medications, past injuries, ageing and then came lifestyle practices (*i.e.* smoking) and psychosocial factors [45]. Embedded in this perception is the respondents' emphasis on pathophysiological conditions in health measurement and intervention. Although the sampled respondents do believe that psychosocial factors play a role in health status, it should be

noted here that they did not itemize those conditions. This speaks to the conceptualization of health that these respondents have come to accept, and the fact that they believe that health is not limited to biomedical sciences. Using their definition of health, the study shows how culture plays a pivotal role in determining how men will seek health care irrespective of the nature of their condition.

According to a number of demographers [46,47], health has been conceptualized as "functioning ability". These pundits categorized "functioning ability" as 1) being able to provide both personal care and independent living but having some difficulty in performing these tasks or in getting about outside the home, 2) having no functioning difficulties, 3) being unable to independently provide personal care, and finally 4) being able to provide personal care but not able to manage life in the home independently" [46].

### 3. EXPANSION OF THE BIOMEDICAL MODEL

Studies reveal that positive moods and emotions are associated with wellbeing [48] as the individual is able to think, feel and act in ways that foster resource building and involvement with particular goal materialization [49]. This situation is later internalized, causing the individual to be self-confident, from which follow a series of positive attitudes that guide further actions [50]. Positive mood is not limited to active responses by individuals, but a study showed that "counting one's blessings," "committing acts of kindness", recognizing and using signature strengths, "remembering oneself at one's best", and "working on personal goals" all positively influence wellbeing [50,51]. Happiness is not a mood that does not change with time or situation; hence, happy people can experience negative moods [52].

Human emotions are the coalescence of not only positive conditions but also negative factors [53]. Hence, depression, anxiety, neuroticism and pessimism are seen as a measure of the negative psychological conditions that affect subjective wellbeing [54-56]. From Evans and colleague [54], Harris *et al.* [55] and Kashdon's monographs [56], negative psychological conditions affect subjective wellbeing in a negative manner (*i.e.* guilt, fear, anger, disgust); and the positive factors influence self-reported wellbeing in a direct way—this was corroborated in a study conducted by Fromson [57]; and by other scholars [53,58,59]. Acton and Zodda [60] aptly summarized the negative affective of subjective wellbeing in the sentence that reads "expressed emotion is detrimental to the patient's recovery; it has a high correlation with relapse to many psychiatric disorders."

From the theologians' perspective, spirituality and religiosity are critical components in the lifespan of people. They believe that man (including woman) cannot be

whole without religion. With this fundamental concept, theologians theorize that man cannot be happy, or feel comfortable without a balance between spirit and body [62]. In order to achieve a state of personal happiness, or self-reported subjective wellbeing, some pundits put forward a construct that people are fashioned in the image of God, which requires some religiosity before man can be happy or less stressed. Religion is, therefore, association with wellbeing [63-65] as well as low mortality [66]. Religion is seen as the opiate of the people from Karl Marx' perspective, but theologians, on the other hand, hypothesize that religion is a coping mechanism against unhappiness and stress. According to Kart [67], religious guidelines aid wellbeing through restrictive behavioural habits which are health risks, such as smoking, drinking alcohol, and even diet.

The discourse of religiosity and spirituality influencing wellbeing is well-documented [68,69]. Researchers have sought to concretize this issue by studying the influence of religiosity on quality of life, and they have found that a positive association exists between those two phenomena [70]. They found that the relationship was even stronger for men than for women, and that this association was influenced by denominational affiliation. Graham *et al.*'s [71] study found that blood pressure for highly religious male heads of households in Evans County was low. The findings of this research did not dissipate when controlled for age, obesity, cigarette smoking, and socioeconomic status. A study of the Mormons in Utah revealed that cancer rates were lower (by 80%) for those who adhered to Church doctrine [72,73] than those with weaker adherence.

In a study of 147 volunteer Australian males between 18 and 83 years old, Jurkovic and Walker [65] found a high stress level in non-religious as compared to religious men. The researchers in constructing a contextual literature quoted many studies that have made a link between non-spirituality and "dryness", which results in suicide. Even though Jurkovic and Walker's research was primarily on spiritual wellbeing, it provides a platform that can be used in understanding the linkages between the psychological status of people and their general wellbeing. In a study which looked at young adult women, the researchers found that spirituality affects the physical wellbeing of a populace [69]. Embedded within that study is the positive influence of spirituality and religion on the health status of women. Edmondson *et al.*'s work constituted of 42 female college students of which 78.8 percent were Caucasian, 13.5 percent African-American, 5.8 percent Asian and 92 percent were non-smokers.

Health psychologists concurred with theologians and Christians that religion influences psychological wellbeing [74,75]. Taylor [74] argued that religious people are more likely to cope with stressors than non-religious

individuals, which explains the former's better health status. She put forward the position that this may be done through avoidance or vigilant strategies. This response is an aversive coping mechanism in addressing serious monologue or confrontational and traumatic events. Coping strategies, therefore, are psychological tools used by individuals to problem-solve issues, without which they are likely to construct stressors and threaten their own health status. Taylor [74] said that "some religious beliefs also lead to better health practices", producing lower mortality rates from all cancers in Orthodox Christians.

#### 4. EVIDENCE OF USE FOR BIOPSYCHOSOCIAL MODEL

Even though policy makers are cognizant of the importance of healthy lifestyle practices and their influence on wellbeing [76], we continue to sideline them in understanding health status, and using this concept in the formulating of hypotheses that will drive a broader policy focus of health care for the populace. This is evident in our neglect to expand studies for policy purposes that collect data on health using the biopsychological model, meaning that policy formulators are emphasizing physical vulnerability or dysfunction to measure health status. Is there a study that has sought to use a maximization definition of health that will be able to better evaluate and plan for the wellbeing of Jamaicans?

A study conducted in Barbados reveals that there is a statistical causal relationship between socioeconomic conditions and health status. The findings revealed that 5.2% of the variation in reported health status was explained by the traditional determinants of health (disease indicators—See **Table 1**). Furthermore, when this was controlled for current experiences, the percentage fell to 3.2% (falling by 2%). When the current set of socioeconomic conditions were used they accounted for some 4.1% of the variations in health status, while 7.1% were due to lifestyle practices, compared to 33.5% that were as a result of current diseases [34]. It holds that the importance placed by medical practitioners on the current illnesses—as an indicator of health status—is not unfounded as people place more value on biomedical conditions as being responsible for their current health status. Despite this fact, it is obvious from the data—using 33.5%—that there are other indicators that explain some 67.5% of the reason why health status should be as it is. Furthermore, with an odds ratio of 0.55 for number of illnesses, there is a clear suggestion that the more people reporting illnesses, the lower will be their health status [34]; and this was equally so for more disease symptoms—odds ratio was 0.71).

**Figure 1** above is a depiction of the use of the biopsychosocial model in the study of health status. This



**Table 1.** Potential determinants of self-reported health status, study of historical and current predictors of self-reported health status in elderly persons, Barbados, 1999-2000.

Predictor group	Individual predictor in each predictor group
Historical socio-economic indicators	Education, occupation, childhood economic situation, childhood nutrition, childhood health, number of childhood diseases
Current socioeconomic indicators	Income, financial means, household crowding, living alone, currently married, number of people in household, number of siblings living outside household, number of other family and friends living outside household
Current lifestyle risk factors	Body mass index, waist circumference, categories of disease risk, nutrition, smoking, exercise
Disease indicators	Number of illnesses, <sup>a</sup> number of symptoms, <sup>b</sup> geriatric depression scale score, number of nights in hospitals in 4-month period, number of medical contacts in 4-month period

<sup>a</sup>Illnesses included hypertension, diabetes, cancer, chronic lung disease, coronary heart disease, cerebrovascular accident, and arthritis

<sup>b</sup>Symptoms included chest pain, shortness of breath, back pain, severe fatigue or tiredness, joint problems, persistent swelling in the feet or ankles, persistent dizziness, persistent headaches, persistent wheezing, cough or phlegm, persistent nausea or vomiting and persistent thirst or excessive sweating.

Source: Hambleton *et al.* [34]

research was conducted in Barbados between 1999 and 2000, in which health status was predicted by a composite function of five general typologies of variables. The model shows that health status is not primarily limited to biomedical conditions—such as diseases and ailments—as has been the custom of many scholars. While different indicators as used by these researchers may not be possible in this paper because of the limitation of the secondary dataset—for example “current lifestyle risk factors”, “childhood nutrition”, “childhood diseases”, “environmental factors”, to name a few—despite the data’s shortcomings, the study emphasizes the use of a multi-dimensional approach in the study of wellbeing.

Bourne [27], using secondary data, encapsulates George Engel’s conceptual idea of a multidimensional model which incorporates biological, social, psychological, environmental and social conditions in examining wellbeing. Wellbeing is operationally defined as material resources, illness and total expenditure of households. The sample is drawn from a nationally representative survey of 25,018 Jamaicans, some 9.3% of the sample being elderly. From a sample of 2,320 elderly Jamaicans (ages 65 + years), Bourne [27] found that 10 of the 14 predisposing variables explain 36.8% of the variance in wellbeing. Of the 10 statistically significant variables, the five most important ones, in descending order, are 1) area of residence ( $\beta = 0.227$ ); 2) cost of medical care ( $\beta = 0.184$ ); 3) psychological conditions [total positive affective conditions] ( $\beta = 0.138$ ); 4) ownership of property

( $\beta = 0.135$ ); and 5) crime ( $\beta = 0.111$ ). Among the other factors, which are the 5 least important conditions, are negative affective conditions, marital status, educational level, average occupancy per room, age of residents, and the environment. Thus, whether or not we use Grossman’s model [77], Hambleton *et al.*’s model [34] or Bourne’s models [27-33] it is clear from them that wellbeing extends beyond biological conditions to include psychological, environmental, and social conditions.

Another study was conducted by Bourne [30] of some 3,009 elderly Jamaicans (60 years and older), with an average age of 71 years and 10 months  $\pm$  8 years and 6 months, of which 67% ( $n = 2,010$ ) resided in rural areas, 21% ( $n = 634$ ) dwelled in Other Towns and 12% ( $n = 365$ ) lived in the Kingston Metropolitan Area. The mean General Wellbeing of elderly Jamaicans was low ( $3.9$  out of  $14 \pm 2.3$ ). Bourne’s model [30] identified 10 explanatory variables which explain 40.1% (adjusted R-squared) of the variance in general wellbeing. In this study he deconstructed the general model into 1) economic wellbeing and 2) physical wellbeing (proxy by health conditions). Using the same set of explanatory variables, the latter model explains 3.2% of the variability in wellbeing (proxy by health conditions) compared to 41.3% for the former model (*i.e.* economic wellbeing using material economic resources). General Wellbeing was operational as material resources and functional limitation (or health conditions). Material economic resources constitute ownership of durable goods (such as motor vehicles, stereo, washing machines, et cetera); income (proxy by income quintile); and financial support (e.g. social security and other pensions). Hence, it follows that the biopsychosocial model is a better proxy for wellbeing; and that functional limitation is still not a good proxy for wellbeing as used by Hambleton *et al.* Grossman and even Smith and Kington [78].

Globally, regionally and especially domestically, the most popular space in research concerning wellbeing is the biomedical approach; its popularity is fuelled by the combination of the traditional operational definition of health (good physical health) and the dominance of the medical sciences in this field of enquiry. The number of studies on mortality, structural alterations and functional declines in body systems, genetic alterations induced by exogenous and endogenous factors, prevalence and incidence of diseases, and certain diseases as determinants of health, clearly justifies establishing leniency towards medical science in the study of health and health care. Engel [10,11] accredited the biomedical model that governs health care to the practice of pundits over the last 300 years. This model assumes that psychosocial processes are independent of the disease process. Engel argued for the bio-psychosocial model that it includes biological, psychological, and social factors, which is a close match to the multi-dimensional aspect of man.



With this as the base, it can be construed from Engel's thrust behind the biopsychosocial model that the previous model is a reductionistic model. Engel's biopsychosocial model in analyzing health emphasizes both health and illness, and maintains that health and illnesses are caused by a multiplicity of factors. Engel's theorizing, therefore, is better fitted for the definition of health coined by the World Health Organization.

In Jamaica, only a miniscule number of studies have sought to analyze the effect of the death of a family member or close friend, violence, joblessness, psychological disorders and sexual abuse, on wellbeing, or social change on health, area of residence on quality of life and the perception of ageing and its influence on health conditions. Morrison [18] 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. This was equally endorsed by Peña [79], the PAHO/WHO representative in Jamaica. They argued that this was not the only reason for the changing life expectancy. Morrison summarized this adequately, when he said that:

Aiding this transition is not only the increased longevity being enjoyed by our islanders but also the changing lifestyle associated with improved socioeconomic conditions [18].

With the post-1994 widened definition of health as put forward by the WHO, people are becoming increasingly cognizant of the fact that socio-cultural factors such as geographical location, income, household size and so on, as well as several psychological factors, explain wellbeing; hence the new definition of health has coalesced biomedical variables and socio-cultural and psychological variables in the new discourse on wellbeing.

Stressors may arise from within the individual or outside his/her environment. One such external stressor that may affect the individual is the death of loved ones. Response to the mortality of close family members may be more traumatic, depending on expectancy or non-expectancy. Bereavement influences the incidence of mortality. This may result in exhaustion of the individual's "adaptive reserve". The person's body wears down and becomes highly vulnerable to morbidity and even death. Rice put forward a study that contradicted an association between bereavement and mortality. He wrote that "Fathers who lost sons in war had lower mortality rates than those who lost son in accidents" [75]. Despite that study, Rice quoted other studies [80] that showed the impact of stress on human physiology. He argued that it is suppression during and after bereavement that creates the stressors, which become potent devices for mortality and morbidity. Lusyne, Page and Lievens' [81] study finds that there is an association between bereavement and mortality. However, this is more likely to occur in the short-run (*i.e.* during the first 6 months after the death of

the spouse). As there are a number of confounding situations which in the long-run could offset the likelihood of mortality, such as remarriage, social support from other family members, grandchildren and so on, bereavement may not necessarily be a constant in one's life. Nevertheless, Lusyne, Page and Lievens affirm with other studies that the loss of a long-time partner may result in the death of the living spouse. The explanations given for this eventuality are 1) role theory as the surviving partner may find the role played by the other partner too stressful and so 2) may not be able to adapt to the new role alone; this is more a male phenomenon [81].

The Planning Institute of Jamaica and Statistical Institute of Jamaica collect data on ill-health, and questions are asked based on visits to health practitioners, healers and pharmacies, injuries, ailments, ownership of health insurance, duration of the disease or illness, cost of treatment for ailments and injuries, and mental disability. Those questions are clearly derivatives from the biomedical model, as they seek to address physical functioning without equally emphasizing culture, lifestyle behaviour, depression, stress, fatigue, trust for others, perception of one's position in current society and the likelihood of one's place in the future, religiosity, time periods, HIV/AIDS of family members or the individual and how it is likely to influence the his/her health and wellbeing, social involvement in various institutions, and issues on positive affective conditions.

## 5. CONCLUSIONS

In sum, any definition of the construct of health must be multidimensional in nature. Such a definition must include 1) personal and environmental conditions; 2) social factors; 3) psychological conditions; 4) diagnosed illness; and 5) self-determination of wellbeing. If health is solely based on illnesses (*i.e.* biomedical model), we would have failed in our bid to operationally define a construct that is comprehensive enough to encapsulate all the tenets that would capture man in his complex milieu. Health is not simply a construct. It plays a critical role in the formulation of policy for health care, and in the development of the society. Thus, if we emphasize only the biomedical approach to the study of health, its underpinnings could only be symptomology. This approach fails to capture issues outside of the mechanistic structure of man's conception of biomedical sciences. Concurring if health care professionals were to use as their premise dysfunctions to indicate health, which is the deviation from the norm, this image of health would affect policy formulation and intervention programmes which are geared towards this narrow conceptualization. But this approach lacks are clear characteristics outside of illnesses that will encapsulate wellness, wellbeing, and healthy life expectancy in a multidimensional hu-

man. Thus, the biomedical model relies on illness identification to capture health and this fashions the health care system, which also limits health coverage outside of this negative view of health. This is undoubtedly suboptimal, and does not account for health. The health services in the Caribbean, and in particular Jamaica, are best described as medical services, as they are still fundamentally structured around the biomedical model which is embedded as the image of health, and not psychosocial, economic and ecological wellbeing. Although the WHO as early as the 1940s provides a definition of health that is comprehensive and complex, some scholars believe that it is elusive and by extension immeasurable. There are merits to the argument of those academics, but the emphasis should not be the difficulty of how operationalizing the construct labels it “elusive”. Instead the goal should have been for researchers and academics alike to formulate a working definition of the conceptual framework created by the WHO. Thus, when Grossman in the 1970s moved away from the difficulty posed by the WHO’s conceptual framework, he developed an econometric framework that laid the foundation for the measure of this seemingly “elusive” construct. Other scholars have built on the initial theoretical model introduced by Grossman, and Bourne in particular has added psychological and environmental conditions to the already established factors of the health model. The constitution of the World Health Organization (WHO) states that “Health is a state of complete physical, mental and social well-being and not merely the absence of diseases or infirmity” [3]. Hence, any use of morbidity statistics, dysfunctions, sickness, diseases or ill-health to conceptualize health is limited, and by extension is a negative approach to the treatment of this construct. Health, health care, and patient care are critical components in development, as unhealthy people will not be able to offer to the society their maximum, neither will they be able to comparatively contribute the same to productivity and production as their healthy counterparts. Therefore, the conceptualization of health is not merely a concept but a working product that affects all aspects of society.

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