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Health Literacy: An Intervention to Improve Health Outcomes

Monique Ann-Marie Lynch and Geovanni Vinceroy Franklin

Abstract

WHO has defined health literacy as the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make basic health decisions for themselves and their loved ones. The purpose of this article is to outline the scope of low health literacy as a concept and explore some appropriate interventions that researchers and healthcare professionals may use to reduce its negative impact on health outcomes such as mortality. The authors conclude by identifying areas of research that are needed to advance the conceptualization of health literacy in reducing hospital mortality and morbidity.

Keywords: health literacy, health promotion, health behavior, health knowledge, health outcomes

1. Background

Over the last decade, there have been many studies on a variety of interventions to decrease mortality by improving the health of patients through literacy. Some researchers such as [1] have addressed direct literacy related barriers primarily by testing interventions to make health education materials easier to understand. While other researchers like [2] have focused on indirect barriers by providing more general supportive interventions.

According to the [3] individuals with low to moderate health care, literacy skills face implications that may include the incompetence to carry out positive self-management, it also means higher medical costs due to more medication and treatment errors, more frequent hospitalizations, longer hospital stays, more visits to their health care provider, and a lack of necessary skills to obtain needed services.

Notwithstanding the colossal implications of low health literacy, there remains a significant amount of misunderstanding surrounding the concept and its implications for healthcare professionals and facilities in Jamaica [4]. Health literacy is not a new concept to the Jamaican healthcare community, however, it has not been a concept that is practiced on a daily basis in our facilities [4]. In other countries, it has caught the attention of researchers, policy makers, and healthcare professionals due to its prevalent impact on health and well-being.

The purpose of this chapter is to outline health literacy as a concept and explore some appropriate interventions that can assist researchers and healthcare professionals to reduce its negative impact on health outcomes such as mortality. The chapter will also address issues concerning low health literacy in developed and developing countries. Firstly, the major definitions of health literacy are

presented in the introduction. Then, the description of interventions, how they have been applied, the challenges and outcomes, the discussion of resources required for implementation, the authors' unique perspective on the issue and proposed a framework for the implementation and evaluation of health literacy interventions, including culturally appropriate programming and the multi-disciplinary team approach.

2. Introduction

The term health literacy was introduced in 1974 in a paper calling for minimum health education standards for all grade-school levels in the United States (US) [5]. The World Health Organization (WHO) later defined health literacy as “the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand, and use information in ways that promote and maintain good health” [6].

Kirsch et al. [7] explained that the inability to read, write, and use numbers effectively, is common and is associated with a wide range of adverse health outcomes in the Caribbean and the Americas. There are five health outcomes of low health literacy, which are health knowledge, health behaviors, use of health care resources, intermediate markers of disease status, and measures of morbidity or mortality. However, this chapter will only focus on health knowledge and health behaviors because research indicates that knowledge affects behavioral outcomes [7]. Additionally, in order to reduce hospital mortality rates, individuals must have the knowledge base to obtain, process, and understand basic health information and services needed to make appropriate health decisions [8].

Health knowledge, or health education, refers to the knowledge and understanding people have about health-related issues [9]. It is important that people understand the causes of ill-health and recognize the extent to which they are vulnerable to, or at risk from, a health threat. The World Health Organization's (WHO) definition of health was expanded in 1996 as a state of complete physical, mental and social well-being and now includes a social dimension. Additionally, some social scientist of that era, believed that WHO expansion of the health, must include a spiritual dimension [10].

According to the aforementioned [11] definition of health, it summarized complete health as the development of the social, physical, mental and spiritual dimension of a person. These four aspects of health were highlighted in the Bible, by Jesus Christ, when he said in Luke 2 verse 52 “he (Jesus) increased in wisdom (mental health) and stature (physical health) in favor with God (spiritual health) and man (social health),” [12]. Therefore, in order for a person to experience complete health, there must be growth in these four dimensions. Individuals in this twenty-first century must know that impairment in any one of these dimensions will affect the proper function of the other dimensions. These four components of health knowledge, spiritual, mental, social and physical will be defined and discussed below.

2.1 Spiritual health

The term “spiritual intelligence” was coined by Danah Zohar in 1997. Additionally, Ken O'Donnell in 1997 who is an Australian author and consultant living in Brazil, also introduced the term “spiritual intelligence” and Michal Levin in 2000 use this “spiritual intelligence” in his book to draw attention to the concept

of linking the spiritual and the material reality of life that is eventually concerned with the well-being of the universe and those who coexist in it [13–15].

It appears challenging to outwardly define spiritual health or spiritual intelligence without comprehending that the perception of spirituality is divergent from religiosity [16]. Fogel [17] opines that, for a very long time “spiritual” was, considered to be separate from “religious” and our secular societies prefers to steer as far as possible away from discussions on religion, for fear of kindling dormant conflicts or intruding on a taboo subject.

However, some researchers have tried to coin some functional definitions. For instance, [18] “spiritual intelligence is concerned with the inner life of mind and spirit and its relationship to being in the world.” On the other hand, [19] defines spiritual intelligence as “the ability to act with wisdom and compassion, while maintaining inner and outer peace, regardless of the circumstances.”

Research conducted by medical ethicists has reminded us that religion and spirituality form the basis of meaning and purpose for many people [20]. It is important to note that patients in health care institution, not only have the pain of physical ailment to confront with but the mental and spiritual pain that is associated with their sickness.

2.2 Mental health

According to [21], mental health literacy (knowledge) is defined as “knowledge and beliefs about mental disorders which aid their recognition, management or prevention.” According to [22], there are key areas that help to equip persons with mental health knowledge. This will assist them with overcoming cultural and societal obstacles by challenging the fear of stigmatization. These areas include, but are not limited to; (a) the ability to recognize specific mental health problems, (b) knowledge and beliefs about risk factors, self-management approaches and the professional help available, (c) knowledge and beliefs about self-help interventions, (d) attitudes which facilitate recognition and appropriate help-seeking behaviors and (e) knowledge of how to seek and access mental health information.

The economic impacts of mental illness include its effects on personal income. These effects can only be quantified based on the ability of the persons with mental disorders or their caregivers to gauge the measurable economic burden of mental illness [23]. Bloom et al. [24] on the World Economic Forum (WEF) described three different approaches used to quantify economic disease burden, which do not only acknowledge the “hidden costs” of diseases, but also their impact on economic growth at a macroeconomic level (**Figure 1**).

Mental health is now getting a great deal of scrutiny around the world, it is an area of health that developing countries are seeking to end stigmatization and discrimination through literacy [26]. In a study conducted by [27] opines that the most commonly expressed emotional response to the mentally ill and mental illness was fear, often specifically a fear of “dangerousness.” While the study reported some positive and empathetic responses, the most prominent emotional response was fear. Mental health literacy is the one of the most effective ways that fear towards the mentally challenged can be mitigated [28].

The possible recommendation could be that, to be effective and relevant, mental health educators must seek to improve individual literacy and numeracy skills. Furthermore, mental health information needs to be written clearly and the information must be accessible to those who need it. This type of information must be useful in improving practical social skills and the communicative elements should aid these persons to access and maintain health [29].

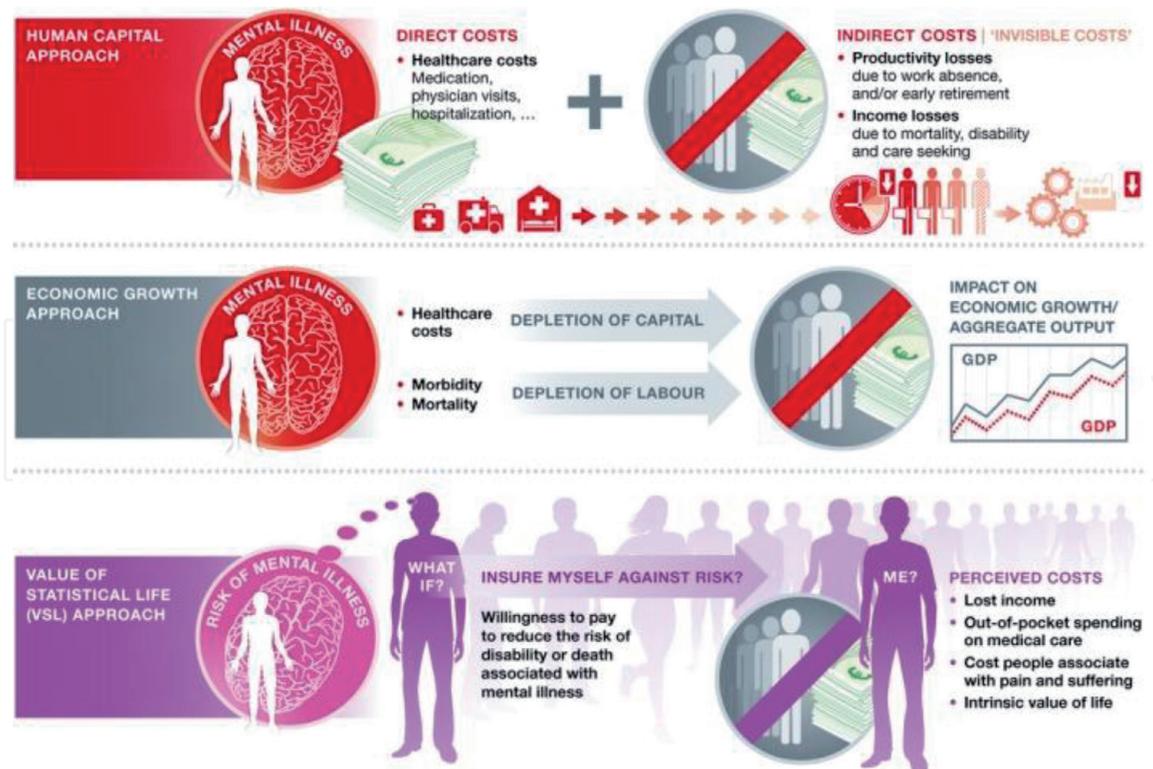


Figure 1. Different approaches used to estimate economic costs of mental disorders [25].

2.3 Social health

The idea of social health is less recognizable to that of physical or mental health, but nonetheless, it's one of the four pillars (spiritual, mental and physical) that forms the WHO definitions of health. According to [30] accentuates that “a society is healthy when there is equal opportunity for all and access by all to the goods and services essential to full functioning as a citizen.” Therefore, the success of a healthy society is influenced by the rule of law, equality in wealth distribution, public involvement in the decision-making process and a level of social capital.

In developing countries like Jamaica, there are many determinants of social health that affects the livelihood of many such as inequality, poverty, exploitation, violence and injustice, these are at the root of ill-health and the deaths of poor and marginalized people [31]. According to [32] mentioned that a determinant is any factor that contributes to person current state of health. Based on researchers, it is believed that social determinants of health are the situations in which people are born, grow, live, work and age. These conditions are molded base on the supply of money, power and resources at the global, national and local levels [33].

Julianne et al. [34] postulated that the quality of life and social relationship are closely related to mental health and the mortality rate. Furthermore, their opinion is that this modern way of life limits individual's social interactions, which results in people living insolation from extended families in developing countries. It is clear, that people of all different ages around the world are living alone, and loneliness on this crowded planet is becoming common [35].

2.4 Physical health

According to [36], physical health literacy is the ability to move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person. Moreover, it is supported by

researchers that physical literacy is an essential and valuable human competency that can be described as a disposition learnt by human individuals surrounding that enthusiasm, confidence, physical competence, knowledge and understanding that establishes physical quests as an important part of their lifestyle [37].

In her research, [38] gave a summary of the key features of physical literacy:

- Everyone can be physically literate as it is appropriate to each individual's endowment,
- Everyone's physical literacy journey is unique, physical literacy is relevant and valuable at all stages and ages of life,
- The concept embraces much more than physical competence,
- At the heart of the concept is the motivation and commitment to be active, the disposition is evidenced by a love of being active, born out of the pleasure and satisfaction individuals experience in participation,
- A physically literate individual values and takes responsibility for maintaining purposeful physical pursuits throughout the life course and charting of progress of an individual's personal journey must be judged against previous achievements and not against any form of national benchmarks.

2.5 Health behaviors

There are several definitions for health behavior, one such researcher, [39] defined health behavior as the activity undertaken by people for the purpose of maintaining or enhancing their health, preventing health problems, or achieving a positive body image. Conner and Norman [40] added that any activity that is undertaken for the purpose of preventing or detecting disease or for improving health and wellbeing is defined as a health behavior. In the Handbook of Health Behavior Research, [41] defines health behavior as behavior patterns, actions and habits that relate to health maintenance, to health restoration and to health improvement' (Vol. 1, p. 3). Behaviors within this definition include medical service usage (e.g., physician visits, vaccination, screening), compliance with medical regimens (e.g., dietary, diabetic, antihypertensive regimens), and self-directed health behaviors (e.g., diet, exercise, smoking, alcohol consumption and illegal drug use).

It is common to differentiate health enhancing from health impairing behaviors. Institute of Medicine (US) Committee on Health and Behavior Research, Practice, and Policy [42] explained that health impairing behaviors have harmful effects on health or otherwise predispose individuals to diseases and even mortality. Such behaviors include smoking, excessive alcohol consumption, illegal drug misuse and high dietary fat and sugar consumption [42]. In contrast, [43] stated that engagement in health enhancing behaviors conveys health benefits or otherwise protect individuals from disease. Such behaviors include exercise, fruit and vegetable consumption, consumption of water instead of juice, limited alcohol consumption, no usage of illegal drugs and condom use in response to the threat of sexually transmitted diseases [43].

3. Methodology

This chapter utilized a multiple method approach to understand health literacy as an intervention to improve health outcomes. A meta-analysis, design was

employed using three key phrase search and six keywords search resulting from the analysis of 43 articles. A breakdown of the methodologies using the two of the three key phrases is tabulated below (**Tables 1 and 2**).

Author	Population	Participants	Methods
[44]	One-third (77 million)	Over 19,000 adults from 38 states and the district of Columbia participated in the national and state-level assessments to create data for the NAAL.	The 2003 National Assessment of Adult Literacy (NAAL) which is a nationally representative assessment of English health literacy was distributed to American adults age 16 and older.

Table 1.
Showing key phrase: the relationship between health literacy and health outcomes.

Author	Population	Participants	Methods
[45]	Not stated	The demographic sample was 25 elderly and health illiterate persons using a mixed method and a convenience sampling approach.	The instrumentations used were verbal questioning (perception of drug visual aide assistance) and a written questionnaire on how prescription medication instructions should be written currently and in the future; since the sample was compiled of both literate and illiterate people, questions were asked verbally and the questionnaire was administered. The methods used were paper & pencil recording of the types of prescriptions each individual tool, what they should have taken and if they felt comfortable taking their current prescriptions.
[46]	Not stated	There were 15 studies dating from 1997 to 2006, a review confined to complex intervention study design was used and a sample range of 40-2046 participants.	A systematic review of randomized and quasi-randomized controlled trials with a narrative synthesis. The search strategy included searching eight databases from start date to 2007, reference checking and contacting expert informants. After the initial screen, two reviewers independently assessed eligibility, extracted data and evaluated study quality.
[47]	Not stated	There were 20 studies dating from 1992 to 2002, a controlled or uncontrolled experimental design was used and a sample range from 28 to 1744 participants.	The 20 studies were of three types: randomized controlled trials (n = 9), nonrandomized controlled trials (in which subjects were assigned to intervention or control groups by the day or the week or some other nonrandom fashion; n = 8), and uncontrolled, single-group trials (n = 3). The number of participants enrolled ranged from 28 to 1744; most studies had between 100 and 500 participants. All but 2 studies were conducted in the United States. Most interventions and outcome assessments were administered in single sessions. Interventions to improve dietary behavior and one other study delivered multisession interventions and/or followed participants longitudinally to assess changes in outcomes.

Table 2.
Showing key phrase: health literacy interventions to reduce mortality.

4. The relationship between health literacy and health outcomes

U.S. Department of Health and Human Services [8] explained in their research that low health literacy has been correlated with negative health outcomes, including reduced use of preventive health services, poor disease-specific outcomes for certain chronic conditions, and increased risk of hospitalization and mortality. Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association [48] agreed in their publication that health literacy is assumed to be a stronger predictor of health outcomes than social and economic status, education, gender, and age. With that being said, [49] stated that individuals with low health literacy have poorer health outcomes regardless of the illness they are diagnosed with. They went on to explain that low health literacy is more prevalent among vulnerable populations, such as the elderly, minorities, persons with lower education, and persons with chronic disease.

Several researches have shown that low literacy can have a direct and negative effect on health. Berkman et al. [50] explained that they expect this effect to be predominantly important for conditions that require substantial and complex self-care on the part of the patient because of the barriers to accessing and using health information, particularly written and calculated information. DeWalt et al. [2] agreed with [51, 48] by adding that low literacy can also be a marker for other conditions, such as poverty and lack of access to health care, that lead to poor health outcomes especially outcomes such as mortality.

The National Assessment of Adult Literacy report [44] explained that only 14% of adults have attained proficient health literacy, so in other words, nearly nine out of 10 adults may lack the skills needed to manage their health and prevent diseases. Additionally, it was reported that 16% of adults (50 million people) in having below basic health literacy and these adults were more likely to report their health as poorer (42%) than adults with proficient health literacy. Low literacy has been linked to poor health outcomes such as higher rates of hospitalization, less frequent use of preventive services and even hospital mortality [44].

4.1 Health literacy interventions to reduce mortality

4.1.1 The Jamaican context

In a study conducted by [45], a health literacy intervention was carried out in the cities of Black River, Balaclava, and Parottee, Jamaica by creating prescription drug visual aids that will assist the elderly health illiterate population with their medication adherence and to promote health literacy.

The results from the questionnaire used in the research showed that 80% of the overall sample were below the sixth-grade education literacy level, with 64% below the third-grade level and 16% between the fourth and sixth-grade levels. Additionally, 12% of respondents specifically from the city of Black River reported the ability to read but not to write. From the verbal questioning, 60% of the 64% of respondents who were below the third-grade education literacy level believed that visual aids would make medications easier to take. Furthermore, 8% of the 16% of respondents who were between the fourth and sixth grade education literacy levels believe that visual medication aides will benefit them. The results also displayed that a health literacy problem does exist in the areas in St. Elizabeth, Jamaica.

The findings indicated that the health literacy of the elderly population in rural Jamaica is a national health concern [45]. If these persons are incapable of understanding what type of medications they are taking and why, they are less likely to

take them regularly and as scheduled/prescribed. However, many of these same persons understand and acknowledge that they also need help in terms of understanding and taking their medications and illnesses. The outcome of this study stated that rural elderly Jamaicans believe visual medication aides will benefit them and the results indicated that a health literacy problem does exist in the area, and visual aides are needed due to the literacy level and health literacy level of the region.

The main limitation stated for this intervention was that the sample size used was relatively small (25) and it might have played a role in respondents indicating their receptiveness to visual aids. Future implications of this research suggested that there is a need to conduct further research on the public health disparity between individuals in urban versus rural areas and that research might reveal disparities in the health outcomes.

4.1.2 The international context

Another study conducted by [46] in the United States of America, to evaluate the published literature of the effects of complex interventions intended to improve the health-related outcomes of individuals with limited literacy or numeracy. The focus of the 15 studies aforementioned in the methodology was on: health professionals (n = 2), literacy education (n = 1), and health education/management interventions (n = 12). In most of these studies (9 out of 15), outcomes were measured in the intervention session or immediately afterwards. One study did not specify its follow-up period. The other five studies reported follow-up periods ranging from 1 week to 10.5 months with a median 5.5 months.

The primary results showed that there were statistically significant in 13/15 trials, though 8/13 had mixed results across primary outcomes. Two trials showed no significant positive finding in primary outcomes: one failed to show a significant improvement in health knowledge and the other failed to show significant changes in cholesterol and blood pressure changes. It was recommended that health related improvements were reported across all four intervention types, however, all interventions were complex interventions and it is not known which components of each initiative were effective. This, combined with the fact that some of the interventions were resource intensive, demands that future initiatives are carefully designed and based on sound theoretical and pragmatic reinforcements. The wider empowerment and community participation aspect of some of the interventions represent a welcome, broader approach to health literacy.

It was concluded that a variety of interventions for adults with limited literacy can be beneficial in improving some health outcomes especially mortality. The classes of outcome most likely to improve based on the study such as knowledge and self-efficacy. The implications suggested that more research was needed on the mechanisms of interventions that are most effective for improved health outcomes (specifically mortality). Additionally, there was limited evidence on interventions that targeted health professionals and their aptitude to deliver care optimally to patients with limited health literacy and to improve mortality rates especially in a hospital setting.

Pignone et al. [47] reported on a systematic review of interventions designed to improve health outcomes for persons with low health literacy in developed countries defined as United States, Canada, Western Europe, Japan, Australia and New Zealand. The focus of the studies were easy-to-read printed materials (n = 4), video/audio tapes (n = 4), computer-based programs (n = 3) and individual or group instructions (n = 9). The primary results displayed that the diversity of outcomes limits conclusions about the effectiveness, though effectiveness “appeared mixed”. There were limitations in research quality that also hindered the drawing of conclusions. The five articles which dealt with the interaction between literacy level and

the effect of the intervention stated mixed results. It is therefore recommended that research is needed to establish whether the correlation between low literacy and poor health outcomes is direct or indirect so as to most efficiently direct interventions.

The results of the interventions should be stratified by literacy level and future studies should focus on intermediate to longer term outcomes rather than short-term knowledge outcomes or health behaviors. There is no research which has considered how interventions may impact on health disparities or care costs based on race, ethnicity, culture or age. Multi-component interventions should be analyzed to establish efficacy and effectiveness.

It was concluded that several interventions based on the study have been developed to improve health for individual with low health literacy. There were limitations in the interventions tested and outcomes assessed make drawing deductions about effectiveness very difficult. Finally, advanced research is required to have a better understanding of the types of interventions that are most effective and efficient for overcoming health literacy-related barriers to good health and to improve health outcomes such as mortality.

World Health Organization Regional Office for South-East Asia [51] stated in their Health Literacy Toolkit for Low- and Middle-Income Countries that the Optimizing Health Literacy and Access to health information and services (Ophelia) approach is an effective system that supports the documentation of community health literacy needs, and the advancement and testing of possible solutions to reduce mortality. Each Ophelia project seeks to improve health and equity by increasing the availability and accessibility of health information and services in locally appropriate ways [51].

Projects have been carried out in Lavender Hill, an informal settlement, Cape Town: Ophelia South Africa under the title, "Identifying health literacy needs and developing local responses to health emergencies"; in Thailand under the title, "Optimizing health literacy needs of people" in Thailand and in New Zealand under the title, "Health literacy and Whanau Ora Outcomes: Ophelia New Zealand." The outcomes generated new data and tools that were used to inform practice and policy and aid practitioners at both the patient and organization levels to comprehend and meet the needs of the community, targeting those with low health literacy [52]. Batterham et al. [52] stated that the Ophelia approach is innovative as it recognizes that health literacy is multidimensional and different people may have different health literacy needs and that it took a systematic and grounded approach to intervention development.

4.2 Health literacy issues affecting developed and developing countries

In both developed and developing countries, a significant portion of the population has challenges in understanding health information which affect how they traverse the health care system. Decades of investigation show that there is a strong correlation between limited literacy in dealing with challenges in the health care and lower health knowledge intertwine with misinterpretation of prescriptions and lower receipt of preventive care [53].

In both developed and developing countries for the population to benefit from better health care, they must be knowledgeable about the various aspects of health care. Mayagah and Wayne [54] identified six general themes that help determine why health literacy is important for population health, firstly, large numbers of people affected because some developed countries have high adult literacy rates, while in developing countries approximately half have rates below the global developing country average of 79%. Research indicated that in developing countries literacy rates are lower among women than men, which is affecting how these

persons respond to health information [55]. Additionally, difficulties with health literacy affect all people, but the elderly and chronically ill are most at-risk, and also have the greatest health care needs and expenses [56]. People with low health literacy are overwhelmed by health care because their skills and abilities are challenged by the demands and complexity required [57].

Secondly, poor health outcomes, findings indicated that there is a clear correlation between inadequate health literacy as measured by reading fluency and increased mortality rates. Report on the Council of Scientific Affairs [58] suggested that poor health literacy is “a stronger predictor of a person’s health than age, income, employment status, education level, and race.” Moreover, UNICEF, reported that hundreds of millions of people around the globe are living in extreme poverty. Both poverty and poor health are linked and can be the result of social, political, and economic injustices. The linkage is a vicious, self-perpetuating cycle where poverty causes poor health and poor health keeps communities in poverty. Research cited that people who are economically deprived and living in poor environments are faced with many health risk factors in their everyday life [59].

Thirdly, increasing rates of chronic disease are estimated to account for almost half (47%) of the total burden of disease. Likewise, chronic diseases often occur with co-morbidities (concomitant but unrelated diseases) and co-morbidity further increases the demand for health care. For example, individuals with diabetes and very high co-morbidity are expected to use 10 times the healthcare resources of the population average [60]. Research done on the Canadian Health Care System that indicated help is provided to people with chronic conditions such as diabetes, asthma, congestive heart failure, renal failure and chronic obstructive pulmonary disease. A large proportion of the available healthcare resources are devoted to treating chronic conditions and, in Canada, 67% of all health care costs are incurred as a result of caring for those with chronic conditions. More than half of Canadians aged 12 or older report at least one chronic condition and at age 65, 77% of men and 85% of women have at least one chronic condition [61]. Health literacy plays a crucial role in chronic disease self-management. In order to systematically manage chronic conditions on a daily basis, individuals must be able to assess, understand, evaluate, and use health information [62]. According to the Adult Literacy and Life Skills Survey, more than half (55%) of working-age Canadians do not have adequate levels of health literacy and only one in eight adults (12%) over age 65 has adequate health-literacy skills [63]. Also, [1] specified that populations most likely to experience low-literacy levels are among those being asked to manage their condition such as older adults, ethnic minorities, people with low levels of educational attainment, people with low income levels, nonnative speakers of English, and people with compromised health [64].

Also, those with low literacy skills are not likely to attend voluntary peer-led self-management programs even if they are aware, they exist. In 2003, the Institute of Medicine in its priority areas for national action, identified self-management/health literacy as an area that cut across many health problems [64]. Schloman [65] opines that “improved health literacy was put forward as a condition necessary to enable active self-management of patients for most conditions.”

Fourthly, health care costs; the additional costs of limited health literacy range from 3 to 5% of the total health care cost per year. Research has indicated that, insufficient health literacy has been associated with an increased need for disease management, higher medical service utilization among older, racial, ethnic minorities, and with low educational attainment [1]. Research conducted by the [66] in managing care, suggested that individuals with low health literacy have higher medical costs and are less efficient when using services than those individuals with adequate health literacy. Their findings estimated the costs associated with inadequate health literacy among adults at the national level to be \$73 billion annually.

Fifthly, health information demand has created discrepancies between the reading levels of health-related materials and the reading skills of the intended audience. Often, the use of jargon and technical language made many health-related resources unnecessarily difficult to use [54]. The populations in both developing and developed countries are challenged with the increasing demands to understand and utilize health information, which are some of the complexities that are facing modern health care systems [67]. Additionally, the increasing proportion of people living with chronic conditions, competencies for proactive self-management of health and participation in collaborative care have become key public health agendas. The ability to take active part in shared decision making with healthcare providers is important for adherence to treatment, self-management of chronic diseases [68].

Lastly, equity is a factor that suggests that low levels of health literacy often means that a person is unable to manage their own health effectively, access health services effectively, and understand the information available to them and thus make informed healthy decisions [54]. Researchers over the past two decades, have been investigating the importance of health literacy and have examined over 1600 related research articles such as the field of “health care disparities” [69]. Improving the health literacy of those with the worst health outcomes is an important tool in reducing health inequalities [54].

It's evident that the challenges with [70] equity may still exist today. Many countries have failed to document data about the population that will make inferences about the disparities that have contributed to the lower quality of care. Due to the limited data about these disparities, situations that affects individuals with low literary skills are often times overlooked and efforts to address inequities in health care are rendered as ineffective. Furthermore, health care researchers are of the view that data to properly assess these disparities can be collected. However, health care organizations are lacking in the measurement tools to assess patient literacy in populations served by operating health care systems [70]. Isham [70] further lamented that quality measures for improving health literacy are lacking. Therefore, the current problems of low health literacy should perhaps be viewed less as a patient problem and more as a challenge to health care providers and health systems to reach out and more effectively communicate with patients. The United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute of Statistics (UIS) projected that over 776 million adults, which is about 16% of the world's adult population lacking basic literacy skills [71]. These figures appear to be alarmed by the strides that the human race has made in development of education. Additionally, a recent survey of health literacy among 2000 adults in the United Kingdom found that one in five people had difficulty with the basic skills required for understanding simple information that could lead to better health [72].

It seems that quality health care is advancing in the developed countries due to the developments in technology [73], while on the other hand, the population in developing countries is affected by low literacy levels due to the limited advancement of technology [74]. However, research has indicated that 60% of adult Canadians (ages 16 and older) lack the capacity to obtain, understand and act on health information and services, and also the ability to make appropriate health decisions on their own. In addition, the proportion of adults with low levels of health literacy is significantly higher among certain groups. These findings raise questions of equity [54].

Findings from comparable studies done in Europe, Australia, Latin America and other countries have correlated literacy levels with access to education, ethnicity and age as determinants to better health care [75]. Other studies have indicated that having limited literacy or numeracy skills also acts as an independent risk factor for poor health, which lead to medication errors and insufficient understanding of diseases and treatments [76]. Additionally, [49] from their review determined

that there is a relationship between literacy and health outcomes that was directly corresponding to several adverse health-related factors, such as, knowledge about health and health care, hospitalization, global measures of health, and some chronic diseases.

In exploring the link between literacy and mortality, Baker and colleagues suggest that there is a strong correlation between inadequate health literacy—as measured by reading fluency—and increased mortality rates [77]. Neuroscience and Behavioral Health specialists opine that health literacy is essential to overall patient care. It's very important for every citizen in both developed and developing countries to understand basic health information. This understanding will empower people to make better decision as it relates to self-care and medical decisions. Educating the population of any country about health is crucial in mitigating inequalities that exist in health care systems. It is evident that individuals with low health literacy have poorer health status and higher rates of hospital admission, are less likely to adhere to prescribed treatments and care plans, experience more drug and treatment errors, and make less use of preventive services [78].

Poor health literacy with limited access to education may result in a deficiency in patient self-management. According to [79] believes that lack of understanding of procedures of basic health information, will interfere with their ability to take better care of themselves and make health related informed decisions. Therefore, it's evident that patients who are involved self-management will mostly experience positive health outcomes and place fewer demands on the healthcare system.

The role of healthcare facilities and health care professionals is to assist patients in becoming better in self-management and limit the patients' dependency on the health care system. It's important to understand that health literacy is pivotal in the management of chronic medical conditions. Patients need to learn and understand self-management by having access to health information which will enable them to better cope with daily challenges (includes a complex medical regimen, plan and make lifestyle adjustment) that comes with chronic illness [80].

Another major issue that affects both developed and developing countries is the cost that is attached to health care. Research has concluded that is difficult to correctly evaluate the real economic cost that is associated with low health literacy. Factors such as what constitutes health literacy and insufficient data collection on the frequency of low literacy help to compound the challenge of economic cost. Researchers believe that despite these challenges in evaluating the impact of limited health literacy studies that are available underscore the importance of addressing limited health literacy from a financial perspective [81].

Vernon et al. [82] revealed that the findings of a health literacy cost study that was based on an analysis of US National data revealed that the cost of low health literacy to the U.S. economy is in the range of \$106–\$238 billion annually. Additionally, he stated, “when one accounts for the future costs of low health literacy that result from current actions (or lack of action), the real present-day cost of low health literacy is closer in range to \$1.6–\$3.6 trillion” [82].

It is clear that tracking the economic cost associated with low health literacy will strongly depend on the strength of the economic status of the developed and developing countries. Rootman and Ronson [83] stated that inequality is another major factor that affects the citizens of all countries. They postulate that “a person's literacy level is influenced by many factors and conditions; these determinants of literacy are similar to the determinants of health commonly referred to in the health promotion literature.” Studies have indicated that factors like education, personal ability, early childhood development, aging, living and working conditions, gender and culture and language help to influence literacy rates in countries around the world [83].

Research in the United Kingdom indicated [84] that low health literacy is emphatically connected with more unfortunate health outcomes, and every dynamic increment towards higher health literacy is related to a more prominent probability of participating in a solid and healthier way of life, explicitly eating at least five servings of fruits and vegetables and being a non-smoker. Likewise, [83] expressed that low levels of health literacy frequently imply that an individual cannot deal with their own wellbeing adequately, access health services viably, or comprehend the data accessible to them and therefore settle on educated and sound health choices. Enhancing the health literacy of those with the poor, negative health outcomes is a critical device in diminishing health inequalities [83].

It's important for developing countries to comprehend that health literacy entails development of individual level of knowledge, personal skills and the confidence to take action to improve self-management and community health by encouraging changes in the personal lifestyle and living conditions. Therefore, health literacy is more than people reading pamphlets and making appointments but is the overall improvement in the individual's ability to access health data and their capacity to effectively use that information [85].

In both developed and developing countries but mostly in developing nations, health care systems need to address the needs of communities and breaking down the barriers that exist through health literacy, such as, lack of compliance medication regime. Lack of health educators working with vulnerable citizens in communities like women, those living rural areas and immigrants. Other barriers like language, socio-political, economic and cultural barriers and time constraints pose challenges to health care providers and health literacy advancement. Research has shown that these vulnerable people have significantly worse outcomes which is associated with high mortality and morbidity rates due to the lack health literacy levels. Therefore, developing countries like the Caribbean in tackling the economic cost of low literacy must apply a comprehensive, and integrated health approach to the services that are important in transforming in the model of care [79].

Pan American Health Organization [79] reported that regardless of the improvements has been achieved in health literacy, poverty and inequities remain a challenge in the Region. Recent data suggest that Latin America and the Caribbean (LAC) remains the most inequitable region in the world, with 29% of the population below the poverty line and the poorest 40% of the population receiving less than 15% of total income. Such inequities are reflected in health outcomes: for example, the Region of the Americas did not achieve the Millennium Development Goal (MDG) target for the reduction of maternal mortality by 2015, and despite significant reductions in infant mortality, very sharp differences exist between countries. Without specific interventions to transform health systems, economic growth is not sufficient to reduce inequities.

As a developing country, Jamaica is confronted with many health issues. Specifically, there are concerns with an ever-aging population, which continues to grow in size at an astounding rate of 11.3% each year [86]. Coverson [45] asked these impertinent questions, "who will take care of this aging population, what services will be available, and how the elderly will maintain a reasonable quality of life are all questions that are facing Jamaica in the near future. People are living longer and with this increase in life-years come other concerns such as the cost of care, who will administer the care, and access to care as travel becomes more difficult with increased age."

Paul and Bourne [87] suggested that this vulnerable group in the population that are affected by reading difficulties have greater challenges in understanding the high level of grammar associated with health care instruments, diagnostic tests, directions and medications. This lack of comprehension can result in patients

experiencing confusion in navigating the healthcare system, and are significantly handicapped in the task of self-management or caring for their family members.

4.3 Cultural issues affecting health literacy in developed and developing countries

Baker [88] concurring with other researchers agree that culturally, health care is multifaceted idea. National Center for Cultural Competence [89], culture has been defined as the “integrated pattern of human behavior that includes thoughts, communications, actions, customs, beliefs, values and institutions of a racial, ethnic, religious or social group.”

State of illness is viewed through a cultural lens in countries around the world. With these cultural lens people summarize health and sickness and based on their perception will respond to the health message. It's important to note that culture will help people determine what treatment options are best (by going to the medical doctor or the herbalist), and it helps people interpret symptoms [90]. It is important to recognize that based on these cultural health beliefs that an individual has, will greatly impact how they think and feel about their health and health challenges. It also affects the kind of people that they seek care from and how they respond to recommendations to make changes to their lifestyle and how they accept health intervention messages [91].

Due the complex nature of health literacy and cultural practices, health literacy cannot have one “sprang” approach in reaching the populace. Health literacy is not determined solely by an individual's capacity to read, understand, process, and act on health information. However, it's dependent on the request that individuals make for health information and their ability to decode, interpret, and understand the information presented. Furthermore, health literacy is not constant, but is a dynamic state that may change with the situation [88]. Researchers have agreed that in order to effectively deal with low health literacy in the health care system, there needs to be an aggressive research agenda that will in cooperate evidence base tools that will provide relevant data in order to address these challenges [92].

Cultures also vary in their styles of communication, in the meaning of words and gestures, and even in what can be discussed regarding the body, health, and illness. Health literacy requires communication and mutual understanding between patients and their families and healthcare providers and staff. Culture and health literacy, both influences the content and outcomes of health care encounters [29]. Cooper and Roter [93] review the relationship that exists between the relationship between culture, patient-provider interaction, and quality of care and have concluded that culture gives significance to health information and messages. The awareness that people have about the definitions of health and illness, preferences, language and cultural barriers, and stereotypes are strongly influenced by the individual's culture which can greatly sway health literacy and health outcomes. Furthermore, others challenges are developed due to the different educational backgrounds among patients and providers and those responsible to create health information can lead to cultural challenges based on the wording used to share the information [93].

Research done on the importance of culture and health literacy in European-American cultural groups indicated that the use of language differs in discussing symptoms such as pain [94–95]. Base on the cultural, linguistic differences were linked with changes in diagnoses, regardless of symptomology. African-American patients frequently experience shorter physician-patient interactions and less patient-centered visits than Caucasian patients [93, 96].

With the ever increasing melting pot of ethnicity in countries around the world, health care systems are forced to recognize these different ethnic groups with

cultural diversity in order to be inclusive [93]. Therefore, cultural, social, and family norms have transformed the attitudes and beliefs which will significantly impact the levels of health literacy (native language, socioeconomic status, gender, race, and ethnicity are considered as influencers that limits person's control which affects his or her ability to participate fully in a health-literate society [97]. It behooves the health care providers to properly utilize the various modes of communication such as news publishing, advertising, marketing, and the plethora of health information sources available through electronic channels are also integral to the social-cultural landscape of health literacy when communicating with cultural masses [29].

By incorporating a greater focus on health literacy, health care professionals will move closer toward a patient-centered health care system (**Figures 1 and 2**).

Governments around the world must understand that need to develop a health care system that works is not the burden of health care consumer. The need to improve health literacy must be seen as a partnership between public and private organizations whose primary focus is to help citizens become health literate. This cohesive partnership will help both developed and developing nation's realized improvements in health literacy will play a major role in improving health care systems and the holistic health for their citizens [73].

Since health literacy is not constant, but dynamic, governments must observe health literacy as fundamental to health, and essential for improving quality of patient care. Low levels of health literacy present a formidable challenge to the widespread and effective use of patient self-management [99]. However, these challenges can be met. Although, health literacy continues to get more attention at the national level and economic cost becomes visible, improving health literacy will be crucial in reducing adverse outcomes that are connected with low health literacy [73]. Within the twenty-first century there is no universal solution, but by gathering relevant data and implementing best practices can be strategies that can be steadily used to improve health literacy for populations around the world. By simplifying health literacy information which will increase the usability of this information must be the priority focus.

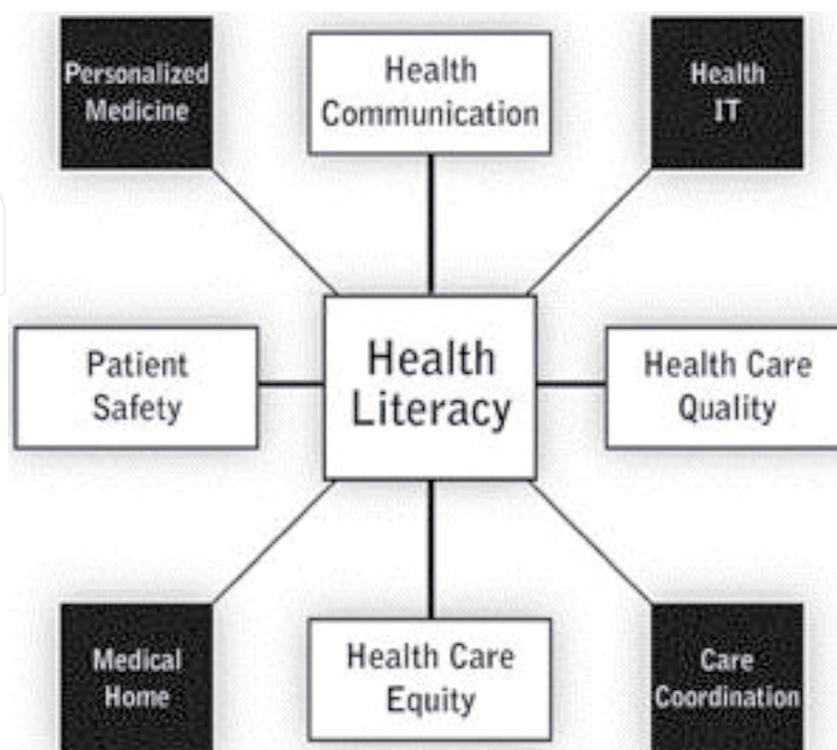


Figure 2.
The intersection of health literacy with health care improvement [98].

When patients can relate health information in plain language in both the written and spoken formats will help in improving the decision-making capacity of the client [92]. The method of assessing and responding to health literacy at the governmental level has been a progression in the focus of health literacy as a responsibility of the patient. However, organizations and systems are accountable for designing service delivery that challenges the health literacy needs of the clients of health care providers [99].

5. Recommendations

Governments, policy makers, organizations, health practitioners and community members must work in partnership to address health literacy issues contributing to poor health outcomes such as mortality and morbidity. We are therefore recommending the following:

- Implementing the Ophelia (Optimizing Health Literacy and Access to health information and services) Australian approach in our health care system and in extent in all developing countries. This approach involves the collaboration of a wide range of healthcare professionals, government leaders or representatives, community health center or hospital patients and leaders to develop health literacy interventions that are based on needs identified within a hospital or community.
- Develop and implement policies that promote documentation of health literacy issues and the implementation of targeted responses.
- Develop and implement policies that promote equitable access to health information and services for all citizens.

6. Conclusions

This visualization for health literacy as an intervention to reduce hospital mortality and morbidity rates can be effective as the data presented shows the importance of meeting the needs of patients with low health literacy in Jamaica. Healthcare professionals have an important role to play, but the responsibility for achieving real progress for patients facing challenges related to health literacy must extend to greater government involvement by creating health literacy policies and programs in both rural and urban areas.

Greater emphasis needs to be placed where the hard-to-reach or disadvantaged or vulnerable groups which include the elderly, children and patients with disability (mental/physical/intellectual). In Jamaica, we are still stuck at the developmental stage of understanding the scope of health literacy and the challenges patients face and developing cultural relevant interventions to address them. The relationship between health literacy and health outcomes such as mortality and morbidity needs to be explored through further research. The interventions identified in this chapter are stepping stones which need significantly greater support, resources for research and implementation of interventions.

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