

Review Article

Application of the Health Belief Model (HBM) in Buruli Ulcer Education: A Literature Review

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Abstract

Introduction: The basic principles of the Health Belief Model as a theoretical foundation were employed to examine Buruli ulcer education. The study employed various strategies to obtain relevant studies about the constructs of the Health Belief Model which were relevant in the context of Buruli ulcer education. **Method:** The strategies used sought to uncover studies that have applied the Health Belief Model as a theoretical framework or theoretical foundation in Buruli ulcer education especially within Ghana and found none. Review of studies was carried out through electronic databases searches, grey materials and electronic books. Search strategy with key terms related to Health Belief Model and Buruli ulcer were employed to retrieve relevant documents. The study considered only references that were relevant to the constructs of the theory and could be used to explain Buruli ulcer education. **Results:** The study considered the six constructs of the theory and these included (people perceived susceptibility to Buruli ulcer, perceived severity of Buruli ulcer, perceived benefit of not contracting Buruli ulcer, perceived barriers to Buruli ulcer healthcare, cues to action for Buruli ulcer and Buruli ulcer knowledge self-efficacy), and modifying factors. The theory has been used in health education for health related events and hence was considered the appropriate theory in the context of Buruli ulcer education. **Conclusion:** The fundamental idea of the theory is based on the individual personal belief about the disease and the methods that exist to be used to help in the reduction of risk factors. Hence public health workers could employ the theory to help in reduction of risk factors exposures among the population especially in endemic communities in Africa.

Keywords

Buruli, Ulcer, Theory, Health Belief Model, Belief, Personal

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1. Introduction

The Health Belief Model (HBM) was an early theoretical framework created to elucidate the process of behavioral change in the context of health among a population [1]. The model was derived from the brief theory put out by Kurt Lewin, who is widely acknowledged as the pioneer of social psychology. Lewin's Theory of Goal Setting posits that individuals reside within a life space consisting of many areas. The areas exhibit values that can be categorized as positive, negative, or neutral. According to the principles, sickness is characterized by areas of negative valence. The author posited that an individual's valuation of a certain consequence (such as Buruli ulcer) and the assessment of the probability that a specific action (such as reducing exposure to stagnant water bodies) would inform their behavior [2].

The Health Belief Model (HBM) was initially proposed in the early 1950s by psychologists Godfrey Hochbaum, Irwin Rosenstock, and Stephen Regels, working in the United States Public Health Service. The theory was created as a result of the unsuccessful implementation of a free Tuberculosis (TB) health screening program [3]. The TB screening project offered free TB screening X-rays to individuals using mobile units conveniently stationed in different sections. Upon seeing the low utilization of the free services by adults, the program organizers initiated an investigation to determine the reasons for the lack of adult participation. Hochbaum, however, commenced an investigation into the factors that drove the few who did emerge to take part in the study. He found that the individual viewed the danger of the illness and the advantages of taking action as pivotal variables in their behaviour.

Over time, the HBM has undergone several modifications, resulting in the emergence of new constructs that were examined in the study. However, the initial model consists of four psychosocial variables. The four factors are perceived vulnerability, perceived severity, perceived benefit, and perceived barrier. In addition, the Health Belief Model (HBM) posits that an individual's health behavior is determined by their recognition of a potentially detrimental health issue and their comprehension that negative consequences may be prevented or reduced. The fundamental concept of the HBM is focused on minimizing or preventing a disease state and seeks to elucidate and forecast health behaviors [4].

2. Constructs of the HBM Used to Explain Buruli Ulcer Education

Perceived Susceptibility

The first concept of the HBM is the perceived susceptibility to a disease, specifically Buruli ulcer. This refers to an individual's beliefs about their chances of getting the health condition (Buruli ulcer). If a person perceives the health problem (Buruli ulcer) to be personally relevant, he/she is more likely to take action to reduce the risk factors associat-

ed with it. To achieve this, activities must be implemented to increase the individual's perception of their vulnerability to Buruli ulcer. Individuals who believe they are susceptible to Buruli ulcer are more inclined to take measures to protect themselves from the possible risk factors of the disease.

Perceived Severity

This pertains to an individual's perception of the severity of the illness, specifically Buruli ulcer, and its associated implications [5]. Recognizing one's vulnerability to a certain problem or condition does not automatically inspire one to take the required preventative measures unless one comprehends the severe bodily and social consequences of acquiring the condition, such as Buruli ulcer. Only by fully comprehending the severity of the adverse effects caused by Buruli ulcer can individuals be motivated to take the appropriate measures to prevent such outcomes. In order for individuals to take preventive measures, such as avoiding stagnant water bodies to reduce the risk of Buruli ulcer infection, they must first recognize the disease as a significant health issue with substantial economic and social implications.

Perceived Benefits

Perceived benefits pertain to an individual's convictions regarding the effectiveness of the recommended course of action in diminishing the danger of the disease's impact (Buruli ulcer). The individual must have faith that by undertaking a certain course of action, it will aid in preventing the occurrence of Buruli ulcer. The belief in the projected results related to the sickness provides a person the confidence to take action because of expected outcomes [6]. This construct of the Health Belief Model suggests that the perception of the efficiency of taking interventions to reduce the occurrence of Buruli ulcer should be positively associated with individuals' actions to obtain the benefits.

Perceived Barriers

Perceived barriers are the individual's belief in the real and psychological costs associated with the recommended behaviors to reduce the illness [5]. Various obstacles may impede individuals' inclination to undertake specific tasks, particularly in the context of Buruli ulcer. Obstacles that are perceived to hinder health actions include phobic reactions, the presence of spiritual support, the use of herbal medicines, healthcare accessibility, personal traits, cost of wound care, inconveniences, and the unpleasantness of wound swelling [8]. Perceived hurdles also encompass the length, intricacy of the necessary behaviors, and availability of resources that would facilitate the adoption and continuation of the essential activities. Individuals must recognize their ability to overcome these obstacles in order to effectively address the ailment known as Buruli ulcer.

Cues to Action

The HBM cues to action refer to events or experiences, whether personal (such as physical symptoms of a health

problem), interpersonal, or environmental (such as media publicity), that serve as motivators for individuals to take action in response to the condition [5]. Cues to action can effectively motivate individuals to comply with the suggested action or treatment for Buruli ulcer. These cues can generate a desire to prioritize health matters, actively seek and accept healthcare, and engage in good health activities specifically related to Buruli ulcer. [7] Suggested that, healthcare workers could demonstrate condom use to adolescents as a way of protection against sexually transmitted diseases during sexual activities.

Self-Efficacy

Perceived self-efficacy is a crucial factor in reducing the risk of Buruli ulcer. Perceived self-efficacy is the assessment individuals make regarding their capability to effectively plan and carry out certain actions necessary to address different future scenarios that might result in the decrease of Buruli ulcer. These "self-beliefs" regarding individuals' abilities have a significant impact on their behavior with regards to Buruli ulcer. Expectations of personal effectiveness govern whether individuals will engage in coping behaviors, the amount of effort they will exert, and how long they will persist in the face of challenges and negative experiences [9].

When individuals possess self-efficacy about Buruli ulcer, they are more likely to take appropriate action. This confidence serves as a motivating element for initiating and maintaining actions aimed at reducing the risk factors associated with the condition. Individuals with self-efficacy would consider the threat of Buruli ulcer illness as significant and would proactively take measures to mitigate the spread of the disease [10]. The individual's perception of the benefits of avoiding the disease determines their willingness to take action to lower the risk, which in turn affects their attitudes towards the activity.

3. Assumptions of the HBM Relevant to Buruli Ulcer

Based on the work of [11], the HBM has specific assumptions that are applicable to Buruli ulcer education. These assumptions were pertinent to the investigation of the study. The HBM operates under the idea that individuals are more likely to take action to prevent Buruli ulcer if they believe it is possible to avoid it. It is essential to educate people about the disease especially in endemic communities. This can only be achieved when one possesses accurate understanding about Buruli ulcer, which currently lacks a confirmed causal agent. Only upon this realization can one effectively take measures against the illness.

The Health Belief Model (HBM) posits that individuals are more likely to engage in preventive behavior if they have a positive anticipation that following a recommended activity would effectively prevent the occurrence of Buruli ulcer. The individual must comprehend the advantages linked to that

course of action. If an individual does not perceive any advantage, it would be challenging for them to undertake the required action or sustain it. The HBM operates under the assumption that an individual will engage in a health-related behavior provided they have confidence in their ability to effectively carry out the advised activity. Confidence in one's ability to execute the advised action is important, which in turn needs the individual to possess the requisite knowledge and abilities. Additionally, a supportive environment is needed to facilitate the execution of the required action(s).

3.1. Strength of the HBM in Relation to Explaining Buruli Ulcer

The concepts of the HBM are interpreted in several ways, which can be applied to elucidate the occurrence of Buruli infection. The components of the HBM are employed to elucidate the mechanisms via which individuals may modify their health-related behaviors [11], and this framework might be applied to address the issue of Buruli ulcer illness. The theoretical constructions establish the foundation for an individual's preparedness to take action in regard to Buruli ulcer. As the theory has evolved, more ideas, signals to action, and self-efficacy have been incorporated to enhance the model's scope and complexity in many practical contexts that are applicable to the study of Buruli ulcer. A cue to action acts as a trigger for an individual's decision-making process about Buruli ulcer. Examples of signals to action for Buruli ulcer include symptoms of the disease or health information provided by healthcare professionals, which people would follow.

3.2. Weaknesses of the HBM Constructs in Relation to Explaining Buruli Ulcer

The weaknesses of the HBM in terms of explaining Buruli ulcer are the model is too individualistic and does not consider the emotional component of the individual behaviour when taking decisions about Buruli ulcer. Also, the HBM fails to account how other factors such as the environment in the case of Buruli ulcer could affect the individual choice to take action. The HBM also fails to explain how the individual beliefs about a disease (Buruli ulcer) could affect healthcare. Despite the weaknesses of the HBM in explaining Buruli ulcer, the study used the model because the authors have made the constructs very simple to explain the health behavior of individuals in relation to Buruli ulcer infection. Also, the authors have made the application of the constructs in a disease specific condition easy to apply and hence could be used to design program of health care for a population within the context of Buruli ulcer. The relevance of the HBM to Buruli ulcer includes the ability of the model to explain how individuals could take the necessary action at every stage to avoid contracting Buruli ulcer. The study employed the HBM because, the model provides a basis for

hypothesis testing linked to the individual's expectations and these are a function of subjective value one will consider as the outcome probability of an action in the context of Buruli ulcer.

3.3. Contextual Interplay Between HBM Constructs and Buruli Ulcer

When applying the theory to explain Buruli ulcer, the main objective is to investigate how the Health Belief Model (HBM) might elucidate the psychosocial components of individuals, including their knowledge, attitudes, beliefs, intentions, and personality traits, that impact their behaviors related to Buruli ulcer. These variables have a substantial impact on community and individual behaviors in the human environment, making them essential in health promotion strategies. The argument is that, in Buruli ulcer health education among people, a person intention and behaviours are related to their perceived susceptibility and benefits associated with taking action to reduce the severity of the disease. The constructs of the HBM are able to link population intention and behavior to their decision making to reduce the risk of the disease [13].

Within the scope of this study, the HBM elucidates that an individual's inclination to partake in specific unfavorable health behaviors is contingent upon their perception of the gravity or severity of Buruli ulcer [9]. It proposes that an individual's health-seeking behavior is impacted by their judgment of the level of danger posed by Buruli ulcer and the importance they attach to taking efforts to mitigate the repercussions of the disease [11].

The utilization of the Health Belief Model (HBM) is closely connected with three essential elements that are crucial to the discourse about Buruli ulcer among the people. These are commonly known as personal beliefs of the condition, which may impact how individuals address the reduction of risk factors. The Health Belief Model (HBM) also serves to mitigate the elements commonly referred to as modifying factors, which encompass the biological traits of the individual, the structural makeup of their surroundings, and the socio-psychological aspects of the individual. The collective influences the individual's perception of the advantages of taking prophylactic measures against Buruli ulcer.

4. Discussion

Buruli ulcer has been documented in over 30 countries globally. Presently, it seems that West Africa is the region that is seeing the most impact. Approximately 70% of the individuals impacted fall into the age group of youngsters who are under 15 years old [14]. The epidemiology of Buruli ulcer is of great significance since its route of transmission has not yet been fully understood, which therefore hinders attempts to prevent and control the illness [15]. The difficulty is in determining the method of transmission of *M. ulcer-*

ans, which poses a significant barrier to developing effective preventative and control measures for the illness. However, it is crucial to emphasize that the utilization of theories can alter how individuals address the condition and thus impact disease management and the overall public health status of the community. Understanding the role of people's beliefs on health problems might assist community members in addressing gaps in scientific information regarding the route of transmission of Buruli ulcer, which are deeply ingrained in society.

The application of the HBM is perfect for explaining how individuals might modify their behaviors as the transmission of Buruli ulcer continues to rise. The HBM has been developed utilizing cognitive, attitudinal, and affective-motivational factors that are associated with the particular individual setting. Experts have revealed that theories based on social cognitive models have been highly efficacious in modifying behaviors. The model is extensively utilized for comprehending, elucidating, and forecasting health behaviors of both people and societies. For almost 50 years, it has been effectively utilized to encourage increased utilization of condoms, seat belts, medical adherence, and health screenings. This approach might also be employed to educate individuals about Buruli ulcer. However, effective health education program cannot be achieved if the barriers militating against the program are not addressed [12].

Studies [16, 17] utilized the HBM in the setting of sickness and discovered that participants' perception of the seriousness of the illness impacted their behavior in seeking healthcare. A study by [18] found that obstacles were the most influential factor in predicting preventive health behaviors, particularly breast self-examination, among women who were at a higher risk of developing breast cancer. A study by [19] discovered that there exists a robust correlation between the perception of being susceptible to HIV and the adoption of preventative measures such as condom use.

5. Conclusion

The use of the HBM to explain Buruli ulcer has health implication for public health workers who interact with Buruli ulcer patients. Based on the reviews, individual perceived benefits, perceived barriers and cues to action were primary motivations to be considered when communicating with people about Buruli ulcer since that could influence behavior change. As a result, public health experts could provide more important information on Buruli ulcer to communities by using cardboard, billboards, radio station, brochures, and fact sheets.

Abbreviations

HBM	Health Belief Model
TB	Tuberculosis

Author Contributions

Atubiga Alobit Baba conceptualized the research protocol and drafted the manuscript, Ataari Abdulai Elvis, Maambo Cynthia, Mahama Wayo Smith and Alexander Atiah Anyagre reviewed the manuscript. Stanley Cowther participated in drafting the manuscript and reviewed the manuscript. Dr. Michael Adjabeng read and approved the final manuscript.

Consent for Publication

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Data Availability Statement

The dataset is available in literature.

Conflicts of Interest

The authors declare no conflicts of interest.

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