EHEALTH AND WEB-BASED HEALTH INFORMATION SERVICE: AN EFFECTIVE APPROACH TO HEALTH EDUCATION AND PROMOTION

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ABSTRACT: *This article sets off the background terms of health education and health promotion which underlie further discussions in this paper. It is then followed with the description of evolutionary terms of ehealth which brings the discussion to the unique term of Web-based health information service which slightly differs from the term health portal. Besides that, the paper will also highlight interesting facts on young adults' usage of health websites concerning the benefits that they will obtain using Web-based health information service. The ultimate objective of this paper is to discuss profoundly Web-based health information service, which is one of the many spectrums in telehealth aimed towards public well-being. The paper presents some opinions on the increasing facts of health website users, particularly young adults' besides highlighting several antecedent factors that were found to be potentially influencing the use of Web-based Health Information Service. This information is significant as to provide guidance for future study on examining what causes the usage issue.*

Keywords: ehealth, web-based health information service, health education, health promotion

1. INTRODUCTION

Health education is defined as a learning process intended to result in the voluntary adoption of behavior beneficial to health and it must contribute to an outcome in which there is a behavioral change associated with a demonstrably improved health status of the individual, group, and community [1]. Behaviors have been shown to be an important factor for the existence or maintenance of health problems. Health education constitutes an effective strategy to influence the behavior of which health education can also be recognized as a behavior-focused health promotion.

Meanwhile, health promotion is defined as, 'the combination of educational and environmental supports for actions and conditions of living conducive to the health' [1]. A more refined term by the World Health Organization (WHO) has defined health promotion as 'the process of enabling people to increase control over their health and its determinants, and thereby improve their health' [2]. The goals and functions of health promotion are many, including: (1) promoting positive health, (2) primary prevention and risk reduction, (3) secondary prevention, early detection and early treatment of disease, and (4) tertiary prevention including the care for patients with chronic disease.

In today's modern living society, the prevention of chronic diseases has emerged as a major focus in public health interest. Present knowledge indicates that adoption of healthy lifestyles and environments are key elements of such preventive action. Furthermore, many of today's and tomorrow's leading causes of death, disease and disability such as cardiovascular disease, cancer, chronic lung diseases, depression, violence, substance abuse, injuries, nutritional deficiencies, HIV, AIDS, STI and health infections can be significantly reduced by preventing harmful behaviors including tobacco use, a behavior that will result in injury and violence, alcohol and substance use, dietary and hygienic practices that cause disease, sedentary lifestyle and sexual behavior that causes unintended pregnancy and disease [3].

Some interesting facts from longitudinal findings showed that overweight and obesity in childhood and adolescence have reached problematic proportions in the last 20 years, with substantial health consequences as the child matures into adulthood [4-6]. In fact, one of the most noted disease associated with obesity and overweight is Type 2 diabetes which has also seen a parallel rise in incidence [5,7].

Looking at those startling facts, it is no doubt that an effective health promotion program is one of the cost-effective investments a nation can make to simultaneously improve education, health level and preventing the leading cause of diseases by considering sustainability, scalability and reach for the program to work [8].

2. EHEALTH

Traditionally, health advice has been anchored in face-to-face settings but increasingly patients are using the internet to get health advice. Today, health information consumers can acquire an abundance of such information freely using ICTs. The confluence of the internet with increasing adoption of health information technology has led to the development of ehealth technologies in the late 1990s. Among the earliest ehealth definition is as follows; "ehealth is an emerging field in the intersection of medical informatics, public health, and business, referring to health services and information delivered or enhanced through the internet and related technologies" [9]. ehealth is further described as tools or solutions for both health professionals and personalized health systems for patients. It denotes access to health information, support and services by the public, health workers, others and a broader example of ehealth applications consists of health information networks, telemedicine services, personal wearable and portable communication system, electronic personal health records and health portals. ehealth or better known as 'internet medicine' also supports internet discussions and support groups, internet-based disease management programs, online health procurement system, online games or quizzes and video streaming [10].

Telehealth and telemedicine are both under the broad spectrum of ehealth with telehealth evolved from telemedicine, as the focus moved from services provided only by doctors to services provided by a range of health professionals [11]. Under telehealth is the health information portal which is a subset of the ehealth systems. ehealth is

most beneficial in its ability to enable new means of care delivery that place more emphasis on patients' self-management [12]. It has been known so far there are several countries that have recognized the potential of ehealth applications in their healthcare settings. For instance, Romania had undergone a major healthcare reform since the year 2000 despite their health system crisis by introducing various ehealth applications including hospital information system, electronic medical record, e-procurement, tele-diagnosis, teleconsultation and education web support service [10]. In Malaysia, the ehealth's efforts started to flourish with the introduction of National High-speed Broadband initiative in 2008 followed by the introduction of Malaysia Telehealth Connectathon also in 2008 [13].

Other advantages of ehealth promotion programs include reduced personnel demands, consistency of interventions over time[14] increased interactivity and flexibility, automated data collection and the potential for more honest self-report by participants [14,15].

3. WEB-BASED HEALTH INFORMATION SERVICE (WBHIS)

WBHIS is an example of online health education under the pillars of ehealth and it is considered as an effective way to promote health education to the mass with the support of technology using online health information services. It is also highlighted as diseases caused by lifestyles which start to threaten the society, and health information service is considered as a preventive measure to alleviate these threats [16]. What interesting is that it is not just a typical healthcare portal but considered as a Web-based health information Service as it contains not just health information but also health services and among the services offered are internet discussions, support groups, internet-based disease management programs, online games or quizzes and video streaming.

The use of the web to retrieve health information is increasingly common and the most common is consumer health-information seeking. The rapid growth of the web has made it possible for consumers to become active participants in the process of getting volumes of health information which will lead them to the process of obtaining, integrating, acting upon the information to improve their health condition. It is predicted that WBHIS will be a tool to support the emergence of the informed and empowered health consumer, and a shift in the balance of power between patient and professional [17]. Also, the internet conveying health information has positive effects on personal health management. In fact, today, there is an increasing emphasis on the three important trends that are; the rise of healthcare consumerism, the growth in the adoption of health information technology, and the widespread adoption of the internet, that have the potential to favorably impact cost, quality, and access to care [18].

Health Websites

This was all started in 2000 where it is estimated that more than 70000 websites provide health information and the number of health website is growing fast [19]. Evidence shows the growth of health information seeking using internet has increased people's attention into prevention and self-care [20]. In fact, there was a study suggesting that internet technologies could serve as a mechanism for delivering health information topic and issues and simultaneously act as health promotion services to people [21].

In t United Kingdom (UK), the number of internet access among households was reported 70 per cent in 2009. This caused an increase in the health-related internet use which saw the growth in the proportion of UK internet users using online information health matters from 37 percent in 2005 to 68 percent in 2009 [22,23]. All these led to an assumption that public perceptions of the importance of the internet as a source of health information have risen dramatically since 2005 [24]. Meanwhile, in the United State (US), seeking for health information is one of the major reasons of internet use among older American adults [25-27].

In a study of WBHIS, respondents first and foremost are interested in using the WBHIS to understand health problems or illness better followed by obtaining alternatives' point of view as compared to the mainstream medicine. Women were found more likely than men to consult the internet for health-related information [28-30].

While in a health-related project on Pew Internet and American Life in 2006, approximately 80 percent of internet users were reported searching for health information online, and approximately half of internet users searched specifically for nutrition information. Two-thirds of individuals who reported searching for health information searched via a generic search engine such as Google or Yahoo while just over one-fourth began their searches on a health-related website. Younger adults (18 to 29 years old) are more likely to start with generic search engines than older adults [31]. However, the figure regarding searching about health information online has slightly dropped to 72 percent in 2013 in a national study involving 3,014 adults in the US and this includes searches related to serious conditions, general information searches, and searches for minor health problems [32].

Another finding from recent research has also revealed that majority adults look for health information to improve their quality of life and there is also a strong correlation found between health outcomes and the level to which patients are informed, that is, when patients have more information regarding their health and this leads to improved health outcomes [33].

Young Adults' Uses of Health Websites

The convenient and anonymous access offered by WBHIS at any time and from any location for a wide range of experts sources and through virtual communities while also able to provide peer support and social interaction has greatly impacted groups of IT user. Youths form a group of information technology-savvy individuals who are increasingly making their own decisions related to health and medical information [34]. More than 93 percent of adolescents are active users of the internet and are technologically savvy and approximately 26 percent of them have accessed the internet for health-related information [34,35]. This group also was reported consistently posted numerous queries on Nemours Foundation's website for "Expert Answers On…" which ranged from nutrition and dieting, sex and pregnancy, and to issues regarding mental health and emotions [36]. It can be seen youths are growing

more interested and are actively involved in their healthcare and medical needs, and internet-based programs have been suggested to be increasingly feasible and desirable amongst younger participants [37-39].

Other studies have also shown that younger adults seek nutrition and health information more frequently from the internet than older adults. In a study done at Midwest University, a higher percentage of university students (73 percent) reported that they are more likely to use internet technology for health information-seeking activities including looking for health and nutrition information [40,41].

Meanwhile, there is a study that sheds light on college students who often struggle with mental health issues when grappled with a university environment filled with academic and social pressures [42]. While mental health concerns are prevalent among people this age, prior research indicates that many young adults will not search for help that sufficiently addresses the severity of their condition [43,44] due to reluctance to seek treatment and inadequacies of in-campus service [45]. The web seems to offer substantial advantages to this group as recent studies conducted outside the US suggest many young adults are using online resources to manage mental health issues [46,47]. Among the advantages offered by online resources include greater personal anonymity (with the exception of IP addresses), privacy and convenience. Most importantly, while mental health stigma deters many from seeking out certain resources for treatment [48], the relative personal anonymity of the web provides some security against this social persecution [49].

From the literature, it is also identified there are two types of information seekers, one group is finding health information for wellness purpose and another group is looking information for dealing with illness (self or immediate family members). The wellness group showed that they are more engaged with health information seeking behavior and promoting the health indicator as compared to the illness group [50]. A more general finding regarding reasons for accessing WBHIS indicates 69.8 percent of respondents look for information for their own health issue while 22 percent reported looking for information for someone else [51].

4. WBHIS ANTECEDENT FACTORS

In many studies of information technology acceptance, there were several antecedent factors identified relating to the individual and system have been shown to significantly affect behavioral intention of WBHIS. Based on a report by European Centre for Disease Prevention, there are many factors that can contribute to online health information seeking, such as types of information sought, reasons and experience level [52]. Another study found several other factors, namely health information seeking behavior characteristics [53,54], the needs (motivational factors) and demographic characteristics (age, gender and level of education) of the users [53]. A similar study also found that demographic factors have contributed much influence on teens' usage of the internet to gain health information found [55]. Within the system design, many recent studies have concluded the most important criteria of WBHIS that the respondents choose are, it must be easy to understand, pervasively highlighted as not complex or easy to use [52,56-60]. Hence, it is important for health website designers to consider designing health websites that are user-friendly in term of the language used and the design as well as not too complex.

Besides that, the perceived advantage offered by WBHIS also was identified as a relevant factor that can influence users' behavioral intention. Perceived advantages also have been used intertwined with perceived usefulness referring to the use of a tool, system or measurement that can be used to advantage, helpful and beneficial to the individual user [61,62]. There are several recent studies that have been found to support this [56-60,63,64]. Other factors that influence one's intention to perform online health information seeking behavior is addressed in the socio-cognitive aspect which can be predicted from attitude, subjective norm, and perceived behavioral control of a person [65]. As what have been noted, favorable attitude and subjective norm, along with greater perceived behavioral control should lead to strong intention to perform a behavior [66]. There are many studies investigating user attitudes and social norms as predictors of WBHIS intention [66-69]. Furthermore, it also has been highlighted users' attitudes remain a great hindrance to the successful implementation of WBHIS [70].

Apart from that, the health status of users also might influence their engagement with the health information sites. It is known that certain health conditions increase patients' need for health care beyond that of the general patient population. These conditions include chronic diseases, such as diabetes, severe injuries, and lengthy recuperation or rehabilitation periods, all of which can necessitate frequent visits to the primary care physician or specialists. Within the psychological views or motivational aspect, it is anticipated that high need for health care will increase users' tendencies to accept ehealth as means to receive additional care or reduce the time spent in receiving care [71].

5. CONCLUSION

The adoption of healthy lifestyles and environments are the key elements of preventive actions towards healthy living and to uphold health promotion is the key. The main highlight of this paper is regarding the Web-based health information service which has been created particularly to educate health consumers regarding health issues. In general, this paper has presented some views on the increasing facts of health websites users particularly the young adults besides highlighting on several factors that potentially influence the use of Web-based Health Information Service. This information is significant as to provide guidance for future study on examining what causes the usage issue. A future study is recommended to include young adults while examining deeper on their views and perspectives as this group will be the main generation that will lead their countries in the future.

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