E- HEALTH LITERACY AS A MEDIATOR ON RELATIONSHIP BETWEEN PREDICTORS AND ONLINE HEALTH INFORMATION-SEEKING BEHAVIOUR AMONG GOVERNMENT EMPLOYEES IN PUTRAJAYA, MALAYSIA

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By

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It has been widely accepted that the internet has become one of the main sources of health information and provides vast amount of information for the promotion of healthy lifestyles. The level of a person's eHealth literacy will determine how much they will benefit from the online health information obtained and provide the efforts to improve the efficiency of the healthcare system and health outcomes. This study specifically investigates predictor namely direct experience, salience of unmet health information needs, beliefs internet self-efficacy, information carrier characteristics of trust in internet health information, information carrier utility factor of internet health information seeking and the role of eHealth Literacy as the mediation effect on the relationship between all the predictors and online health information seeking behaviour (OHISB). The Comprehensive information seeking model (CMIS) and eHealth Literacy (eHeals) provided the theoretical foundation for this study. The study was designed as quantitative study. The data was collected from 387 government employees at Putrajaya, Malaysia from 5 ministries and agencies through self-administered questionnaire over a period of 2-month. The multistage sampling technique was employed in gathering the participants. The examination of the research questions and hypotheses, relevant parts of the survey for each questions or hypotheses were done through statistical tests. Descriptive statistics such as frequency, means and standard deviations were used to provide a better understanding of all the variables. The data were analyzed using Structural Equation Model (SEM). To examine the construct validity and reliability of the model, Confirmatory Factor Analysis (CFA) was used. Finding shows that there were significant relationship between internet self-efficacy belief, trust in internet health information (ICC) and internet health information seeking (ICUF) and OHISB. However, direct experience and salience of unmet information needs did not show significant relationship towards OHISB. Finding also shows that eHealth literacy mediated all the predictor on OHISB accept salience of unmet information needs. Thus, it can be concluded that eHealth literacy is important on all forms of online health information seeking.

KESAN PERANTARAAN LITERASI KESIHATAN ELEKTRONIK TERHADAP PERAMAL DAN TINGKAHLAKU PENCARIAN MAKLUMAT KESIHATAN DALAM TALIAN DI KALANGAN KAKITANGAN KERAJAAN DI PUTRAJAYA, MALAYSIA

Oleh

AZRIEY BIN MAZLAN

Februari 2020

Pengerusi : **Profesor Madya Nor Azura Binti Adzharuddin, PhD**
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Dekad ini internet telah diterima secara meluas dan menjadi sumber utama pencarian maklumat kesihatan dan penyumbang maklumat untuk mempromosikan gaya hidup yang sihat. Tahap literasi kesihatan seseorang akan menentukan sejauh mana manfaat yang bakal diperolehi daripada maklumat kesihatan yang dicari dalam talian dan kebolehan untuk meningkatkan kecekapan penggunaan sistem penjagaan kesihatan. Kajian ini secara khusus menyelidik peramal iaitu pengalaman langsung, ketiadaan keperluan maklumat kesihatan yang tidak lengkap, kepercayaan diri terhadap keberkesanan internet, ciri-ciri pembawa kepada kepercayaan maklumat kesihatan internet, faktor bagi pencarian maklumat kesihatan internet dan peranan literasi kesihatan elektronik sebagai kesan pengantaraan diantara hubungan antara semua peramal dan perilaku mencari maklumat kesihatan dalam talian. Model pencarian maklumat Komprehensif (CMIS) dan literasi kesihatan elektronik (eHeals) dijadikan asas teoretikal kepada kajian ini. Kajian ini dijalankan dalam bentuk kuantitatif. Data dikumpulkan daripada 387 kakitangan Kerajaan di Putrajaya, Malaysia dengan menggunakan teknik persampelan rawak berperingkat. 5 buah Kementerian dan Agensi dipilih bagi menjawab borang soal selidik yang ditadbir sendiri dalam tempoh 2 bulan. Statistik deskriptif seperti kekerapan, min dan sisihan piawaian digunakan untuk memberi pemahaman yang lebih baik terhadap semua pembolehubah. Data dianalisis dengan menggunakan *Structural Equation Model* (SEM). Pengesahan analisis factor (CFA) telah digunakan untuk memeriksa kesahihan konstruk dan kebolehpercayaan model. Hasil kajian menunjukkan hubungan signifikan antara kepercayaan diri terhadap keberkesanan internet, kepercayaan maklumat kesihatan dan pencarian maklumat kesihatan internet terhadap perilaku mencari maklumat kesihatan dalam talian. Sebaliknya pengalaman langsung dan keperluan maklumat yang tidak dipenuhi tidak menunjukkan hubungan yang signifikan. Pengantaraan literasi kesihatan elektronik menunjukkan hubungan signifikan terhadap semua peramal walau bagaimanapun ia tidak signifikan kepada keperluan maklumat yang tidak diperolehi. Oleh itu, dapat disimpulkan bahawa literasi kesihatan elektronik adalah penting dalam semua bentuk pencarian maklumat kesihatan dalam talian.

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This Thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fufilment of the requirement for the degree of Doctor of Philoshopy. The members of the Supervisory Committee were as follows:

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TABLE OF CONTENTS

xi

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AGFI	Adjusted Goodness of Fit
AVE	Average Variance Extracted
AGFI	Adjusted Goodness-Of-Fit Statistic
CFA	Confirmatory Factors analysis
CMIN	Chi-Square Value
HIS	Health Information Seeking
HISB	Health Information Seeking Behaviour
IFI	Incremental Fix Index
ICUF	Information Carrier Utility Factor
ICC	Information Carrier Characteristics
NFI	Normed Fit Index
SEM	Structural Equation Modeling
SPSS	Statistical Package For Social Sciences
OHISB	Online Health Information Seeking Behaviour

CHAPTER 1

INTRODUCTION

This chapter gives an explanation the background of this study, the research problem, research questions, objectives of this research, significance of the study, the limitations of this study and definitions of keywords that should be focused by researchers in order to enhance and produce the outcome that meets the study objectives.

1.1   Background

A healthy lifestyle has been established to have major benefits in the promotion of well-being as well as prevention of diseases (WHO, 1990). Lifestyles that are considered unhealthy include smoking, physical inactivity, and unbalanced dietary intake, which are all significant risk factors for non-communicable diseases (NCDs) such diabetes and hypertension (Chitson, 1994; Kruger, Puoane, Seneka, & van der Merwe, 2005; Steyn & Damasceno, 2006). According to a national survey in Malaysia for the year of 2012, non-communicable diseases have overtaken communicable diseases as the major cause of disabilities and deaths in the country. In terms of the admissions and mortality in public hospitals in Malaysia, NCDs have also emerged as the major causes (Health Facts, 2012). Therefore, there has been growing emphasis by the health ministry in Malaysia in promoting healthy living and lifestyles as well as a major focus on well-being.

A national survey in Malaysia looking at health and morbidity revealed that the city of Putrajaya has the highest percentage of obese residents in the country with a figure of 43% being obese. With Putrajaya being the administrative capital of the country with majority of its residents working in the government sector, it is worthy to note that in terms of occupation, those with the highest rate of obesity were found to be those working in the government or semi-government sector with 40.3% of them being obese (NHMS, 2015).

In Malaysia, 73% of total deaths as accountable by NCDs with cardiovascular diseases such as strokes and heart attacks being the major contributor. Around 35% of these deaths are among those aged below 60, consisting of the working population. A study looking at the burden of disease in Malaysia showed that hypertension, smoking, diabetes, hypercholesterolemia and obesity are the main contributors to death and disability in the population (IPH, 2012). Furthermore, looking at the results from a national survey, the risk factors for NCDs have been increasing over the years (NHMS, 2015).

1

Apart from the effects on mortality and morbidity, due to its complications and chronic nature, NCDs pose a substantial strain and burden on the healthcare system and economy. In some European countries, chronic diseases for example diabetes account for 2-15% of the national health expenditure. Therefore, healthcare organizations, with the assistance of researchers and health advocates have turned to the internet to deliver healthcare services as well as to disseminate health information more effectively and efficiently (Crabb, Rafie, & Weingardt, 2010; Rideout et al., 2005; Wagner et al., 2004; Wright & Hill, 2009). A great deal of private and public investment has gone into web-based health interventions and the development of health and medical websites (Crabb et al., 2012).

Due to the shift from the focus on treatment of disease to the prevention of disease and wellness promotion over the decades, there has been increasing emphasis on the usage of mass media to target health-modifying behaviours such as exercise, diet, smoking and alcohol consumption. The internet has now been regarded as one of the providers for health information (Pew Research Center, 2006). It has been demonstrated that the vast amount of information that can be obtained through the internet and mass media has the prospect of encouraging healthy lifestyles among its users (Stryker, 2003; Yanovitzky & Stryker, 2001).

One of the main resources in managing health lies in seeking information particularly relating to health (Johnson, 1997; Johnson & Meischke, 1993). Mass media has been shown to have the capability in disseminating information and reaching out to large audiences. However, in terms of shaping attitudes and influencing behaviour change, interpersonal channels have regarded to have more success (Backer et al., 1992; Rogers & Storey, 1987). While the approach through mass media is appropriate for raising awareness, interpersonal interactions are important to persuade the adoption of healthy behaviours among the population (Cassell, Jackson, & Cheuvront, 1998).

With the advancements of the internet, it has become easier for people to search for and access health information through resources available online. This may range from specific information regarding a particular disease to general advice for a healthier lifestyle. These information may be available through various avenues namely the official website of the health ministry, websites of private healthcare services and community forums. The internet provide the convenience to retrieve health information independently thus becoming the preference for some in retrieving health information to aid their decision-making. This can indirectly improve the individual's health-related quality of life through enhancing their capability in self-management (Wagner et al., 2004; Jones & Goldsmith, 2009; Solomon, Wagner, & Goes, 2012).

The usage of information technology specifically the internet in enhancing health and healthcare has been diverse (WHO, 2012). The large amount of internet user has shown that internet usage has given some impact to our lives such as communication, entertainment, social activities, online shopping, or online health knowledge. Thus, it

is possible to use information technology to persuade people to change their attitude or behaviour (Fogg, 2003).

One of the ways for patients to obtain information related to their condition or to seek support may be through social networking sites focused on health which have provided a cost effective platform for these patients (Shachak, 2011). Apart from that, information technology has also been used in managing patients' electronic healthcare records. However, most of the electronic healthcare records only support one-to-one interactions between patients, healthcare providers and the administrators (Shachak, 2011). Health-related websites and portals owned by the government are able to provide health information that are trusted and reliable in order to assist the population in making healthy and informed decisions. Through these websites, individuals may be able to seek and access specific information in managing a particular disease or condition or general information for better health and well-being (Tobi, Masrom, Syed Abd Rahaman, & Mohammed, 2017).

The internet has been regarded as an important and powerful medium for information which provides almost everyone with limitless information. Among American adults, around 84% are internet-users (Perrin & Duggan, 2015). A study has shown that around 70% of the internet users in America have attempted to access online health information at some point and out of those, 77% utilized search engines to initiate information-seeking (Fox & Duggan 2013).

In Malaysia, the number of internet users recorded in 1st quarter of 2014 is 20.1 million and the percentage of the internet users in Klang Valley, including Putrajaya, is recorded at 33.9% (MCMC, 2014). Based on the ethnic composition of internet users in Malaysia, majority of internet users are Malay (67.0%), while Chinese users account for 17.8%, followed by the Bumiputra of Sabah and Sarawak (8.2%) and the Indians (6.2%) (MCMC, 2014). Based on this data, it shows that Malay ethnic group contributes to the highest usage of the internet in Malaysia.

The Ministry of Health Malaysia has come up with a web-based health information service called the MyHealth Portal (MHP) in 2005. This is one of the initiatives by the government to encourage the use information and communication technology (ICT) innovatively in the effort to facilitate the growth of country to achieve the status of a developed country by the year 2020. Through the usage of ICT, the government envisions a more integrated, virtual and equally distributed healthcare system with an aim in providing accessible, high quality and accessible healthcare services. Therefore, the vision of creating empowered individuals, families and communities in terms of managing their health may be achieved through the emphasis on wellness. The MHP has the objective of empowering and encouraging the population to take responsibility of their health by providing online information and education related to health that is both reliable and of high quality in a user-friendly manner (Tobi, Masrom, Syed Abd Rahaman, & Mohammed, 2017). In terms of reach, statistics have shown that as of December 2015, the MHP a total of

1,868,917 number of hits with an average of 5191 hits per day and 36,337 hits per week (MOH, 2016).

Studies looking at health information seeking (HIS), eHealth literacy and online health information seeking behaviour (OHISB) in Malaysia have been limited, especially among government employees. One study in Malaysia has looked at the influence of health literacy on health information seeking behaviour. However, it was done among the student population. This study concluded that the influences of health literacy on health information seeking behaviour among the students are moderate on health literacy skills as a whole. While nearly 30 percent of respondents categorized as delinquent. This implies that every 10 university students, 3 of whom have low levels of health literacy (Hamzah, Mohamad, & Abdullah, 2016).

Another study done in Malaysia looked at internet use and eHealth literacy among the population of patients that attended primary care clinics based in hospitals. This study showed that the proportion of internet users among primary care patients is high but the eHealth literacy skill is still poor. Most patients were unable to determine the quality of information they read on the internet and this influence their confidence in utilizing the information obtained to make health-related decisions (Abdullah & Mohd Pauzi, 2016).

In the other part of this region, there have been many studies conducted on eHealth literacy information of the population especially in other Asian, American and European countries. One of the studies is an Iranian study involving medical and health sciences students from a university in Mashhad which investigated on their eHealth literacy. It was found that eHealth literacy is at a low level in this population with females having significantly lower level compared to males (Dashti, Peyman, Tajfard & Esmaeeli, 2016).

In the United States, a study on eHealth literacy and behaviours related to HIS among baby boomers and older adults showed that around 90% of the older web users used interactive websites and social media to search for and share health information. Those who used these interactive websites reportedly had greater eHealth literacy compared to those who did not (Tennant et al., 2015). Greater eHealth literacy is significantly associated with the younger population who has more education and uses more electronic devices. It was also found that women and those with higher education (i.e. college graduates and post graduates) are more likely to use those interactive websites for health information (Tennant et al., 2015).

In light of previous studies looking at eHealth literacy and OHISB, it would be beneficial to extend the study in this area to other populations such as the working population particularly the government employees.

1.2 Problem Statement

In order to satisfy our health information needs, people tend to seek additional health information using different types of information sources such as the internet, newspaper, television, and family members (Caiata-Zufferey, Abraham, Sommerhalder, & Schulz, 2010). However the involvement for health information related searching is still interesting to be discovered especially among the government employees in this country. The internet has been a major provider of health information for the general population (Pew Research Center, 2006). The vast extent of information made accessible through the mass media and internet has the ability to enhance healthy behaviours among the public (Stryker, 2003; Yanovitzky & Stryker, 2001).

Non-communicable diseases have been established to cause harm to health and can interfere with an individual's work performance. Therefore, there have been efforts to monitor and to control this. Being diagnosed with a chronic disease can lead to stress and subsequently effect work performances. While eHealth literacy has been previously measured among adolescents, college students, and the general adult population (Hanik & Stellefson, 2011; Neter & Brainin, 2012; Norman & Skinner, 2006), there has been limited information on the behaviours related to seeking of health information online among employees in Malaysia, especially the government employees. It is realized that the seeking of health information online and as well as literacy in eHealth plays a vital role in raising the awareness for prevention of non-communicable diseases (NCD) so that the disease can be controlled among the government employees.

Currently it is unknown whether government employees have the capability or confidence to look for, comprehend, appraise and apply the health-related information that they have obtained through electronic sources. Without sufficient knowledge, skills, abilities and other attributes (Chan & Kaufman, 2011), government employees may be exposed to non-credible health-related information online which could result in both intentional or unintentional risky health behaviours (Rice, 2006). Based on this premise, the researcher considers that it is essential to investigate the eHealth literacy of government employees in Putrajaya because evidence suggests that this population may especially benefit from what the internet has to offer in terms of improving health literacy and promoting healthy lifestyle. The potential improvements in eHealth literacy rates may improve the quality, capacity, and efficiency of healthcare systems (IOM, 2009) while low eHealth literacy rates may halt the efforts to improve the efficiency of the healthcare system and health outcomes (Collins et al., 2012).

Communication skills of the communities or individual may influence their health-related lifestyles. It is essential to strive towards community empowerment in order foster a community that takes ownership and responsibility of their own health problems. Having access to online resources or online health portals may persuade

and motivate the community to embrace eHealth to improve their health (Tobi, Masrom, Syed Abd Rahaman, & Mohammed, 2017).

The general population uses the internet for a variety of reasons including seeking information to assist in decision-making activities, one of which may relate to health (Fox & Fallows, 2003). Various studies have investigated the type health-related information people typically search for (Fox & Duggan, 2013). In general, searching for health information online is purposeful and usually specific to a disease (Fox & Rainie, 2002; Taylor, 2004). This is in line with the fact that an initial diagnosis has been found to be a trigger for the heaviest use of the internet to seek for health information (Freimuth, Stein, & Kean, 1989).

It has been noted that information related to health sought over the internet include information about a particular condition or disease, disease symptoms, treatment options, and drugs. Individuals with diagnosed conditions also use the internet to look health providers as well as others with similar problems through online support groups (Gavgani, 2010). Apart from that, people also seek out general information related to healthy lifestyles, fitness, weight loss and dietary practices.

In terms of online sites for information, search engines and portals are found to be more widely-used compared to health-specific sites (Taylor & Leitman, 2003). Health literacy is being able to obtained, process, comprehend and communicate the health information in order to make informed decisions regarding health. The level of a person's literacy on health will determine how much they will benefit from the online health information obtained (Berkman, Davis, & McCormack, 2010). Furthermore, there are various factors that may influence the multi-dimensional process of seeking information-seeking.

Healthy lifestyle is not only likely to be influenced by the information they find, but is also influenced by the available information when they use various types of media or when interacting with others (Kelly et al., 2010). In view of the increase of chronic diseases in Malaysia, the usage of internet in managing health has become important (Hashim, 2003). One of the major influencing factors on the usage of the internet for health information has been found to be the attitude towards it (Tse, & Lam, 2012; Yun & Park, 2010). Another factor associated with the seeking of online health information is gender whereby females are found to be more likely to search online for health information compared to males (Fox & Fallows, 2003; Millard & Fintak, 2002).

Health information can be obtained from various sources such as interpersonal interactions, television, printed media and the internet (Galarce, Ramanadhan, & Viswanath, 2011). However, health literacy levels have been found to be low among the population (Hay, 2010; Koh & Rudd, 2015; Torpy, Burke, & Golub, 2011) whereby one study found that only 53% of adults had adequate health literacy (Kutner, Greenberg, Jin, & Paulsen, 2006) and this warrants further attention. Hence,

it is essential to look into this area of HIS and eHealth Literacy and how it can influence individuals to improve health through their OHISB.

It would be beneficial to explore the perception of individuals' health status in relation to HIS and eHealth literacy. With government employees in Putrajaya found to be at high risk of NCDs, based on the high rate of obesity, it is beneficial to explore the factors associated with OHISB among this population in order to ensure adequate attainment and sharing of health information and self-management resources.

Comprehensive Model of Information Seeking (CMIS) has been widely used in literature for health information and its seeking on cancer patients and general people. .Based on the Comprehensive Model of Information Seeking (CMIS), this study explores the relationships between direct experience, salience of unmet health information needs, belief in internet self-efficacy, trust in internet health information, internet health information seeking and eHealth literacy to determine the individuals' knowledge, confidence, and perceived skills in acquiring, assessing and applying the health-related information obtained electronically.

This is to predict the outcome of OHISB among the government employees in Putrajaya. It is believed that the outcome of this study will be beneficial in terms of developing strategies to encourage a healthier lifestyle among this population in order to prevent the occurrence of NCDs.

1.3   Research Questions

1.3.1   What are the socio-demographic characteristics of government employees in Putrajaya Malaysia in this study?

1.3.2   What are the internet health information seeking characteristics of the government employees in Putrajaya Malaysia?

1.3.3   What are the predictors of online health information seeking behaviour (OHISB) among government employees in Putrajaya Malaysia?

1.3.4   What is the level of OHISB among government employees in Putrajaya Malaysia?

1.3.5   What are the relationships between the predictors and OHISB among the government employees in Putrajaya Malaysia?

1.3.6   Would eHealth literacy mediate the relationship between the predictors and OHISB among the government employees in Putrajaya?

1.4 Research Objectives

1.4.1 To determine the socio-demographic characteristics of the government employees in Putrajaya Malaysia.

1.4.2 To determine the characteristics of internet Health Information Seeking among government employees in Putrajaya Malaysia.

1.4.3 To determine the predictors of Online Health Information Seeking Behaviour (OHISB) among government employees in Putrajaya Malaysia.

1.4.4 To determine the Online Health Information Seeking Behaviour (OHISB) among government employees in Putrajaya Malaysia.

1.4.5 To identify the relationship between the predictors of Comprehensive Model Of Information Seeking (CMIS) and Online Health Information Seeking Behaviour (OHISB) among government employees in Putrajaya Malaysia?

1.4.6 To identify the mediation of eHealth literacy on the relationship between the predictors of Comprehensive Model Of Information Seeking (CMIS) and Online Health Information Seeking Behaviour (OHISB) among government employees in Putrajaya?

1.5 Significance of the Study

It has been acknowledged that there exists a gap between health knowledge and health behaviour among Malaysians (NSPNCD, 2010). This is evident from the increasing occurence of overweight and obesity in the country. Within South East Asia, Malaysia ranked highest in terms of overweight and obesity prevalence and globally, at the 39th position. Furthermore, according to a national survey (NHMS 2011), the prevalence of risk factors for non-communicable disease (NCD) is increasing in trend. Around 60.7% of the populations have been diagnosed with NCDs. It is estimated that among Malaysian adults, 6.2 million have hypercholesterolemia, 5.8 million have hypertension, 2.6 million have diabetes, and 2.5 million are obese (NSPNCD, 2010).

1.5.1 Theoretical Significance

This study is expected to benefit many people and community especially the government employees because it is consistent with the Ministry of Health Strategic Plan for 2016-2020 under the Malaysia 11th Plan. Under this plan, there are 8 pillar of health focus to the benefit of the Malaysian people and two of the focus is to create a healthy ecosystem as a contributor towards prevention disease and a healthy lifestyle and ICT for Health Transformation.

1.5.2 Practical Significance

According to the president of the Malaysian Medical Association, being a typical government employee does not provide adequate monetary resources or time to maintain health (MMA, 2017).

In realizing the Ministry Of Health Malaysia Strategic plan for (2016-2020) under the Malaysia 11th Plan objective, the researcher must determine whether populations perceive online health information to be useful and if they are eHealth literate. This study will measure the eHealth literacy of government employees in state of Putrajaya as well as their HIS and OHISB. In addition, if internet health information channels are to improve public health, while avoiding the perpetuation of further social inequalities, the divergence between what eHealth is provided and what individuals can access and use must be resolved (Norman & Skinner, 2006).

1.5.3 Policy Significance

The findings from this study would fill several gaps in this developing field and provide insight into the eHealth literacy of government employees in state of Putrajaya. The government initiative with the help from the Ministry Of Health Malaysia (MOH) to ensure the government employees adhere knowledge on health literacy is beneficial to all parties. The knowledge of individuals levels of eHealth literacy in this population, allows for creation of tailored eHealth technologies, thus allowing government employees to become more empowered to better self-manage non communicable diseases (NCD) and proactively manage their health.

1.5.4 Methodological Significance

The methodology significance from this study also will support to develop new strategies for addressing challenges inherent to delivering online self-management health interventions among government employees. Nevertheless, this study could explain the impact of comprehensive model of health information seeking(CMIS) as a predictors and eHealth literacy as a mediator on government employees, and disclose what factors may predict online health information seeking behaviour, as well as, any associations between eHealth literacy and perceived health status in this population. Furthermore, the data from this study will highlight the current level of eHealth literacy among government employees and any relationships between predictors of CMIS and OHISB among the government employees in state of Putrajaya.

1.6   Scope of Study

This study focuses on HIS through the online medium which is the internet among government employees who work in Putrajaya. The theory used in this study is the the CMIS theory by Johnson (1997) while eHealth literacy is used as the mediator in this study (Norman & Skinner, 2006). eHealth literacy refers to an individual's knowledge, confidence, and skills in the search for, evaluation, and application of electronic health information in order to manage his/ her health or any health issues (Norman & Skinner, 2006). The effectiveness of information seeking, competencies of eHealth literacy and internet health information activity like online searching, chatting, blogging and online group discussion can play a big role in transforming government employees to be savvy on health information.

Studies that have been done looking at health information seeking have predominantly focused on the public health aspects such as educational campaigns. The natural flow in terms of the health information through the media or internet has not been widely addressed (Brown & Walsh-Childers, 2002; Stryker, 2003; Yanovitzky & Stryker, 2001). The effects that are garnered through the media are usually attributed to the messages from the public health campaigns that have been produced strategically and have been disseminated over a specific duration (Chuo Jo Lee, 2009).

Based on technical aspects, this study had focused on measuring the interrelationship of online health information seeking through the mediation of eHealth literacy. The present study was conducted at government agencies in Putrajaya by using simple random sampling method. Five parcels were designated in Putrajaya and one government ministries and agencies from each parcel were selected randomly from each of the five parcels. The respondent from 5 Ministries and agencies from Putrajaya are chosen to be included in this study. Based on the report from the 2015 National Health and Morbidity Survey (NHMS), the population in the administrative capital of Malaysia, Putrajaya, has a 37% chance of being overweight. Furthermore, the rate of obesity in the city was 43%. According to the report, the group of people reportedly having the highest percentage of obesity are the government and semi-government employees (40.3%).

This study had used questionnaires to collect data and to see the result depending on the answers received from the respondents. The questionnaire was prepared in both English and Bahasa Melayu, in which the language was very simple with the usage of words appropriate to the respondent level of understanding of eHealth literacy and health information seeking using the internet. The reason for the questionnaire to be prepared in both languages is because some of the respondent especially from the implementer group are not all well verse with the term that are written in English language. This decision have been made based on the pilot test that been done previously by the researcher before the main data collection took place.

Furthermore, this step is taken to ensure the respondent really understand the requirement of the questions. To ensure the translations of the questions are consistence with the primary resource, the researcher has appointed an interpreter from the Malaysian Institute of Translation & Books (MITB). This research is focusing on government employee's eHealth literacy and health information seeking as a source of health information for OHISB among government employees in the state of Putrajaya. Furthermore, based from the previous study, it is believed that individual who are well use to browse online information and use eHealth as part of their HIS will also have a good level of eHealth literacy (Lee, Byoun, & Lim, 2010).

1.7   Keywords Definition

The following are the definitions for the frequently used terms in this study, arranged in alphabetical order.

1.7.1   eHealth

eHealth refers to the usage of information and communication technology (ICT) and the internet for the purpose of improving health and health care. It has the potential to improve accessibility to health care and information exchange as well as reducing healthcare expenditure and improving the quality of patient care (Jung & Loria, 2010). eHealth has the ability to reach diverse audiences in terms of information tailored to each individual's health needs or communication methods. It can enhance health promotion efforts through delivery of interactive, tailored and engaging information (Kreps & Neuhauser, 2010).

1.7.2   Comprehensive Model of Information Seeking (CMIS)

The CMIS (Johnson, 1997) has been used extensively in the literature related to health information and its seeking (Case, Andrews, Johnson, & Allard, 2005; Rice, McCreadie, & Chang, 2001). In the seeking of information related especially to cancer, CMIS has seven factors grouped under three categories which are antecedents, information carrier factors, and information-seeking actions (Johnson et al., 2001; Johnson & Meischke, 1993). Antecedents are the main factors affecting individuals' health information seeking which include demographic characteristics, personal direct experience with health conditions, salience, and beliefs. The second category, information carrier factors, refers to individuals' perceptions of the features and conditions of information sources. These include the characteristics and the utility of the information sources selected. The third category in the CMIS is the information-seeking actions.

1.7.3 Predictors

The Predictors refer to the independent variables used in the regression analyses. Predictor variable provides evidence on related dependent variable regarding a particular outcome of the variable. Basically, the term of predictor variable ascends from the part of applied mathematics that uses probability theory to estimate future actions of an event based on collected quantitative research evidence in the study. Based on this study, the predictors that were choose for the independent variable are direct experience, salience of unmet health information needs, beliefs in internet self- efficacy, trust in internet health information and internet health information seeking.

1.7.4 Direct Experience

Direct experience refers to the experience of an individual with regards to a disease either personally of through people in their social network (Johnson & Meischke,1993). In other word, it assesses an individual's familiarity with a specific health issue or condition. One measure of direct experience is the perceived general health (Hartoonian et al., 2014; Oh, 2015).

1.7.5 Salience (Unmet Health Information Needs)

Salience means personal significance and interests (Johnson & Meischke, 1993). According to the CMIS, individuals are usually motivated to search for information when they realize that they are missing some salient information (Case et al., 2005). Salience refers to the extent to which people are missing personally significant resources and events (Johnson, 1997). Johnson had suggested that uncertainties or limited knowledge can cause people to seek more information. Based on this idea, Johnson regarded insufficient information environments as a factor of salience. Salience is measured by the individuals' perceived needs and necessity for information and assistance of others (Johnson et al., 1995).

1.7.6 Beliefs (internet Self Efficacy)

Based on the CMIS, beliefs refer to an individuals' self-efficacy which is how much the individual perceive they have control over the future or that there are effective to prevent, treat and control a particular condition. This belief not only effect information carrier factors (e.g., trust in information sources), but also the individuals' exposure to information sources (Johnson, 2001). This definition supports the notion that if individuals have a low sense of self-efficacy or believe that knowing more about a cancer will not allow them to solve their problems, then they are not likely to seek health information. Basically, perceptions of powerlessness can lead to insufficient health-related knowledge (Caiata-Zufferey et

al., 2010; Leydon et al., 2000), because people have no motivation to learn more about their health care when they feel like they have no control (Caiata- Zufferey et al., 2010).

1.7.7 Information Carrier Characteristics (Trust In internet Health Information)

Information carrier characteristics primarily share the message content attributes such as intentions of the source and the potential of the communication in CMIS (Johnson and Meischke, 1993), However, within CMIS, trust on information source is likely to influence health information seeking behaviour (Ruppel, 2016). Nevertheless, trust in the internet health information has been found to be positively related with usage of the internet as a source of health information (Selsky, Luta, Noone, Huerta, & Mandelblatt, 2013). In this study, the usage of information carrier characteristics as a variable in CMIS refers to how much internet can be considered as a source of information that can be trusted. In accordance, the greater the trust of the internet as a source of information, the more likely that individuals will partake in the seeking of health information online.

1.7.8 Information Carrier Utility Factor (internet Health Information Seeking)

Johnson & Meischke (1993) identifies that information carrier utility factor (ICUF) of CMIS as the willingness of a person to engage in the seeking of information and is expected to be positively related to HIS actions. In this study, the health information obtained through the internet is expected to take an effect directly to the needs of the individual on health information. Nevertheless, it was noticeable that the internet usage has increased and became an important part of people's livelihood (Joorabchi, Hassan, & Osman, 2013). Health information seeking was the most common online activity for people's today to look for health information (Atkinson, Saperstein, & Pleis, 2009; Dumitru, Burkle, Potapov, Lausen, Wiese, & Prokosch, 2007; Hale, Cotten, Drentea, & Goldner, 2010). Those who are looking for health information can access the internet freely without any boundaries. Previous study had found that internet can be used to search for oneself, someone else health or medical information regards of physical activity, exercise and diet or nutrition (Hale et al., 2010).

1.7.9   eHealth Literacy

eHealth literacy is the ability to search for, find, comprehend and appraise the information obtained electronically and subsequently apply the knowledge in health-related problem-solving and decision-making (Norman & Skinner, 2006). Previous study on demographics, educational background, and technology usage does have an influences towards eHealth literacy in the general population (Norman & Skinner, 2006). For this particular study, eHealth literacy is the mediator of the relationship between the predictors and OHISB that act as the dependent variable.

1.8   Online Health Information Seeking Behaviour (OHISB)

These days, HIS is essential for most of adults who wanted to improve their life quality in order to have a healthy lifestyle. (Sharit, Hernandez, Nair, Kuhn, & Czaja, 2011). In regards to online health seeking definition, one's guide to health-related decisions and behaviours was acknowledged as the attainment of information from selected channels that is purposeful in nature (Johnson & Meischke, 1993; Wei, 2014). The motivation and encouragement from people's surrounding influence their awareness and beliefs to gather information (Brashers, Goldsmith, & Hsieh, 2002). Nevertheless, the changes of a person's behaviour, assessment and maintenance are also subjects to the significant role of information that they received (Ferguson & Bargh, 2004).

1.9   Summary

Chapter 1 has covered the background for this study that is going to be conducted at Governments Ministry in Putrajaya. The related issues that are discussed within the scope of the study were provided in the statement of the research problem. The research questions construct based on the issues that were discussed and subsequently followed by the research objectives to ensure the clearer picture of the study. The following chapter will discuss the review of literatures.

REFERENCES

Abdullah, A., & Mohd, P. (2016). internet use and e-Health literacy levels among patients attending a hospital based primary care clinic In Malaysia. In: The 4th International Health Literacy Conference 2016, 07 - 09 November 2016, Haiphong City, Vietnam

Ahenkorah-Marfo, M., Teye, V., & Senyah, Y., (2011). Information Seeking Behaviour of Faculty: The Case of The College of Science, Kwame Nkrumah University of Science And Technology, Kumasi, Ghana. *Journal of Science and Technology*, *31* (1)

Al-Naggar, R. A., Bobryshev, Y.V., & Mohd Noor, N.A. (2013). Lifestyle Practice among Malaysian University Students. *Asian Pacific Journal Of Cancer Prevention*. 14. 1895-903. 10.7314/APJCP.2013.14.3.1895.

Anderson, J., & Gerbing, D. W. (1988). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. Psychological Bulletin, 103(3), 411-423.

Arbuckle, J. L. (1995). Amos 17 User's Guide (pp. 1995-2005). Chicago, IL: SmallWaters Corporation.

Atkinson, N. L., Saperstein, S. L., & Pleis, J. (2009). Using the internet for health-related activities: Findings from a national probability sample, *Journal of Medical internet research, 11(1)*, e4.

Avery, E., Lariscy, R., Amador, E., Ickowitz, T., Primm, C., & Taylor, A. (2010). Diffusion of social media among public relations practitioners in health departments across various community population sizes. *Journal of Public Relations Research, 22(3),* 336–358.

Ayers, S. L., & Kronenfeld, J. J. (2007). Chronic illness and health-seeking information on the internet. Health (London), 11(3), 327-347.

Babbie, E. (2007). The practice of social research (11th ed.). Belmont, CA: Wadsworth/Thomson.

Babbie, E. & Mouton, J. (2010).The practice of social research. Cape Town: Oxford University Press.

Baker, L., Wagner, T. H., Singer, S., & Bundorf, M. K. (2003). Use of the internet and e-mail for health care information: results from a national survey. *Journal of American Medical Association, 289(18),* 2400-2406.

Bass S, Ruzek S, Gordon T, et al. (2006). Relationship of internethealth information use with patient behaviour and selfefficacy: Experiences of newly diagnosed cancer patients who contact the national cancer institute's cancer information service. *Journal of Health Communication, 11,* 219-36

Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182

Barroso, C., Carri´on, C. C., & Rold´an, J. L.(2010). Applying maximum likelihood and PLSon different sample sizes: Studies on SERVQUAL model and employee behaviour model. In V. E. Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), Handbook of partial least squares (pp. 427- 447). Heidelberg Dordrecht: Springer.

Baur, C. (2008). An analysis of factors underlying e-health disparities. Cambridge Quarterly of Healthcare Ethics, 17, 417-428.

Bianco, A., Zucco, R., Nobile, C.G., Pileggi, C., & Pavia, M. (2013). Parents seeking health-related information on the internet: cross-sectional study. *Journal of Medical internet Research, 15(9),* e204

Brown, J., & Walsh-Childers, K. (2002). Effects of media on personal and public health. In: Bryant J, Zillman D, editors. Media effects: Advances in theory and research. Hilldale, NJ: Lawrence Erlbaum; pp. 453–488.

Bodie, G. D., & Dutta, M. J. (2008).Understanding health literacy for strategic health marketing: eHealth literacy, health disparities, and the digital divide. Health Marketing Quarterly, 25(1-2): 175-203

Bundorf, M. K., Wagner, T. H., Singer, S. J., & Baker, L. C. (2006). Who searches the internet for health information? Health Services Research, 41(3 Pt 1), 819-36

Caiata-Zufferey, M., Abraham, A., Sommerhalder, K., & Schulz, P. J. (2010). Online Health Information Seeking in the Context of the Medical Consultation in Switzerland. Qualitative Health Research, 20(8), 1050-1061.

Case, D.O. (2002). Looking for information: A survey of research on information seeking, needs, and behaviour. Academic Press, Lexington

Case, D. O., Andrews, J. E., Johnson, J. D., & Allard, S. L. (2005). Avoiding versus seeking: the relationship of information seeking to avoidance, blunting, coping, dissonance, and related concepts. *Journal of the Medical Library Association, 93(3)*, 353-362.

Chitson, P. (1994). Health care implications of non-communicable diseases. Proceedings of the IGU Conference on Health Problems.

Cline, R. J. W., & Haynes, K. M. (2001). Consumer health information seeking on the internet: The state of the art. Health Education Research, 16, 671– 692.

Cohen, L., & Manion, L. (1980). Research Methods in Education, London: Groom Helm Ltd.

Collins, S. A., Currie, L. M., Bakken, S., Vawdrey, D. K., & Stone, P. W. (2012). Health literacy screening instruments for eHealth applications: A systematic review. *Journal of Biomedical Informatics, 45*, 598-607

Crabb, R. M., Rafie, S., & Weingardt, K. R. (2012). Health-related internet use in older primary care patients. Gerontology, 58,164-170.

Choi, N.G. & Dinitto, D.M. (2013) The digital divide among low-income homebound older adults: internet use patterns, eHealth literacy, and attitudes toward computer/internet use. *Journal of Medical internet Research, 15(5)*:e93.

Chan, C. V., & Kaufman, D. R. (2011). A framework for characterizing eHealth literacy demands and barriers. *Journal of Medical internet Research, 13(4),* e94.

Creswell, J.W. (2009). Editorial: Mapping the field of mixed methods research. *Journal of Mixed Methods Research, 3(2),* 95-108.

Creswell, J. W. (2012). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed.). Upper Saddle River, NJ: Merrill.

Cugelman, B., Thelwall, M., Dawes, P. (2011). Online interventions for social marketing health behaviour change campaigns: a meta-analysis of psychological architectures and adherence factors. *Journal of Medical internet Research, 13(1),* e17.

Dashti, S., Peyman, N., Tajfard M., & Esmaeeli, H. (2016). E-Health literacy of medical and health sciences university students in Mashhad, Iran: a pilot study. Electron Physician, 9 (3), 3966-3973

Diviani, N., van den Putte, B., Giani, S., & van Weert, J. C. M. (2015). Low health literacy and evaluation of online health information: A systematic review of the literature. *Journal of Medical internet Research, 17(5),* e112

Dumitru, R. C., Burkle, T., Potapov, S., Lausen, B., Wiese, B., & Prokosch, H. U. (2007). Use and perception of internet for health related purposes in Germany: results of a national survey. *International Journal of Public Health, 52(5),* 275-285.

Dutta-Bergman, M. J. (2004). The impact of completeness and Web use motivation on the credibility of e-health information. *Journal of Communication, 54(2),* 253–269

Druss, B. G., & Dimitropoulos, L. (2013). Advancing the adoption, integration and testing of technological advancements within existing care systems. General Hospital Psychiatry, 35(4), 345-348

Eachus, P., & Cassidy, S. (2006). Development of the web users self-efficacy scale (WUSE). Issues in Informing Science and Information Technology, 3, 199-209.

Eastin, M. S., & LaRose, R. (2000). internet self-efficacy and the psychology of the digital divide. *Journal of Computer-Mediated Communication, 6(1)*

Earl, R., Babbie. (2010). The Practice of Social Research Cengage learning. 12, illustrated, Wadsworth Cangage Learning,

Environics Research Group. (2001). Young Canadian in a wired world: The students' view. Prepared for the Media Awareness Network and Government of Canada. Ottawa: Industry Canada. Retrieve from: htttp://www.connect.gc.ca/cyberwise/pdf.

European Centre for Disease Prevention and Control. (2012), Retrieved from http://www.ecdc.europa.eu/en/Pages/home.aspx

Emont, S. (2011). Measuring the Impact of Patient Portals: What the Literature Tells Us. Oakland, CA: California Healtcare Foundation.

Eysenbach, G. (2001). What is e-health? *Journal of medical internet research, 3*, e20

Eysenbach, G. & Jadad, A.R. (2001) Evidence-based Patient Choice and Consumer Health Informatics in the internet Age. *Journal of Medical internet Research, 3(2)*, e19

Fagnano, M.,. Halterman, J. S., Conn, K. M., & Shone, L. P. (2012). Health literacy and sources of health information for caregivers of urban children with asthma. Clinical Pediatrics, 51 (3), 267- 73.

Faraj, S., & Johnson, S. L. (2011). Network Exchange Patterns in Online Communities. Organization Science, 22(6), 1464–1480.

Fiksdal, A. S., & Kumbamu, A. (2014). Evaluating the process of online health information searching: a qualitative approach to exploring consumer perspectives. *Journal of Medical internet Research, 16*, e224.

Fox, S. (2011). The Social Life of Health Information. Washington, DC: Pew internet and American Life Project, Retrieved from http://www.pewinternet.org/2011/05/12/the-social-life-of-health-information-2011

Fox, S., & Duggan, M. (2013). Information Triage. Washington, DC: Pew internet and American Life Project, Retrieved from: http://www.pewinternet.org/2013/01/15/information-triage

Fox, S., & Rainie, L., (2000). The online health care revolution: How the Web helps Americans take better care of themselves Online life report. Washington, DC: Pew internet & American Life Project.

Galarce, E. M., Ramanadhan, S., & Viswanath, K. (2011). Health information seeking. Thompson T. L., Parrott R., Nussbaum J. F., editors. The Routledge Handbook of Health Communication. 2nd edition. New York, NY: Routledge; 2011:161-180.

Gavgani, V.Z. (2010). Health information need and seeking behaviour of patients in developing countries' context: An Iranian experience. In Proceedings of the 1st ACM International Health Informatics Symposium, 575-579

Ghaddar, S. F., Valerio, M. A., Garcia, C. M., & Hansen, L. (2012). Adolescent Health Literacy: The Importance of Credible Sources for Online Health Information. *Journal of School Health, 82*, 28-36

Gliem J. A. & Gliem, R. R. (2003). Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. Midwest Research to Practice Conference in Adult, Continuing, and Community Education, Columbus, 82-88.

Glynn, R., O'Duffy, F., O'Dwyer, T., Colreavy, M., & Rowley, H. (2013). Patterns of internet and smartphone use by parents of children attending a pediatric otolaryngology service. International *Journal of Pediatric Otorhinolaryngology, 77(5)*, 699-702.

Graffigna, G., Barello, S., Bonanomi, A., & Riva, G. (2017). Factors affecting patients' online health information-seeking behaviours: the role of the Patient Health Engagement (PHE) Model. Patient Education and Counselling, 100 (10), 1918-1927

Gray, N. J., Klein, J. D., Noyce, P. R., Sesselberg, T. S., & Cantrill, J. A. (2005). Health information-seeking behaviour in adolescence: The place of the internet. Social Science & Medicine, 60(7), 1467-1478.

Grinnell, Richard, M. Jr., & Unrau, Yvonne. (2008). "Social Work Research and Evaluation: Foundations of Evidence-Based Practice". All Books and Monographs by WMU Authors. Retrieve from: https://scholarworks.wmich.edu/books/153

Goetz, T. (2010). The Decision Tree: Taking Control of Your Health in the New Era of Personalized Medicine. New York.

Hale, T. M., Cotten, S. R., Drentea, P., & Goldner, M. (2010). Rural-urban differences in general and health-related internet use. American Behavioural Scientist, 53(9), 1304-1325

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis: Overview of Multivariate Methods (Seventh Edition ed.). Pearson Prentice Hall: Upper Saddle River, New Jersey: Pearson Education International.

Hamzah, M. R., Mohamad, E., & Abdullah, M. Y. (2016). Influence of health literacy on health information seeking behaviour among students in public university. *Malaysian Journal of Communication, 32(2),* 405-424.

Han, J. Y., Wise, M., Kim, E., Pingree, R., Hawkins, R., Pingree, S., McTavish, F., & Gustafson, D. (2010). Factors Associated with Use of Interactive Cancer Communication System: An Application of the Comprehensive Model of Information Seeking (CMIS) *Journal of Computer-Mediated Communication. 15*:367–388.

Hartoonian, N., Ormseth, S. R., Hanson, E. R., Bantum, E. O., & Owen, J. E. (2014). Information-seeking in cancer survivors: Application of the comprehensive model of information seeking to HINTS 2007 data. *Journal of Health Communication, 19,* 1308–1325

Hashim, A. (2003). Over review of Malaysia's integrated tele-health project. Retrieved from http://www.eimjm.com/Vol2-No1/Vol2-No1-I4.htm

Hay, L. (2010). Health Literacy. Perspectives in Public Health, 130(3), 105

Hayes, M. G. (1998). Individuals with disabilities using the internet: a tool for information and communication. Technology and Disability, 8(3), 153–158.

Hayes, A. F., (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. Communication Monographs, 76, 408-420.

Health Facts (2012). Ministry Of Health. Health Informatics Centre Planning and Development Division, Retrieved from: http://www.moh.gov.my/images/gallery/stats/heal_fact/health_fact_2012_pag e_by_page.pdf

Hesse, B. W., Nelson, D. E., Kreps, GL, Croyle, R. T., Arora, N. K., Rimer, B. K., & Viswanath, K. (2005). Trust and sources of health information: the impact of the internet and its implications for health care providers: findings from the first Health Information National Trends Survey. Archives of Internal Medcine, 165(22): 2618–2624.

Hernandez, L. (2009). Health Literacy, e-Health, and Communication: Putting the Consumer First: Workshop Summary, Retrieved from: http://www.nap.edu/catalog/12474.html National Academies Press

Holmes-Smith, P. (2000). Introduction to Structural Equation Modelling Using AMOS 4.0: Course Notes. Melbourne, Australia: SREAMS.

Hong, T. (2006). The internet and tobacco cessation: The roles of internet self-efficacy and search task on the information-seeking process. *Journal of Computer-Mediated Communication,11*(2).

Hove, T., Paek, H. J., & Isaacson, T. (2011). Using adolescent eHealth literacy to weigh trust in commercial web sites: the more children know, the tougher they are to persuade. *Journal of Advertising Research, 51(3),* 524-537

Hopkins, K.D. & Glass, G.V. (1984). Basic Statistics for the Behavioural Sciences Englewood Cliffs, N.J.: Prentice-Hall.

Hsu, W., Chiang, C., & Yang, S. (2014). The Effect of Individual Factors on Health Behaviours Among College Students: The Mediating Effects of eHealth Literacy. *Journal of Medical internet Research, 16(12),* e287

Iccha, B., Elmie, N., Shaohai, J. & Julian, L. (2018). Applying the Modified Comprehensive Model of Information Seeking to Online Health Information Seeking in the Context of India. *Journal of Health Communication, 23(6)*, 63-572

Institute of Medicine. (2009). Health literacy, eHealth, and communication. Washington DC: National Academies Press, Retrieved from: http://books.nap.edu/openbook.php?record_id=12474&page=R1

Institute for Public Health (IPH). (2015). National Health and Morbidity Survey (NHMS 2015). National Institutes of Health, Ministry of Health Malaysia.

internet World Stats. (2016). World internet users and population stats, Retrieved from http://www.internetworldstats.com/stats.htm.

internet Survey (2018). Communications & Multimedia: Pocket Book of Statistics, a half yearly statistical bulletin of the Communications & Multimedia industry, Retrieved from: https://www.mcmc.gov.my/ skmm.gov.my /media/ General/pdf/internet-Users-Survey-2018.pdf

Jiang, S., & Street, R. L. (2017). Factors influencing communication with doctors via the internet: A cross-sectional analysis of the 2014 HINTS survey. Health Communication, 32, 180–188

Johnson, J. D., Donohue, W. A., Atkin, C. K., & Johnson, S. (1995). A Comprehensive Model of Information Seeking. Science Communication, 16, 274-303

Johnson, J. D. (2002). On contexts of information seeking. Information Processing and Management, 39, 735-760.

Johnson, J. D. (1997). Cancer-related information seeking. Dresskill, NJ: Hampton Press.

Johnson, J. D., & Meischke, H. (1993). A comprehensive model of cancer information-related information seeking applied to magazines. Human Communication Research, 19, 343–367

Jones, R., & Goldsmith, L. (2009). What is the evidence for the benefits and outcomes for digital health services? NHS Choices

Joorabchi, T. N., Hassan, M. S., & Osman, M. N. (2013). Relationship between internet usage and Positive Youth Development in Malaysia. SEARCH: The *Journal of South East Asia Research Centre for Communication and Humanities, Vol.5, no.2:* 37 – 64.

Kahlor, L. (2010). PRISM: A planned risk information seeking model. Health Communication, 25, 345–356

Kalichman, S. C., Benotsch, E. G., Weinhardt, L., Austin, J., Luke, W., & Cherry, C. (2003).Health-related internet use, coping, social support, and health indicators in people living with HIV/AIDS: Preliminary results from a community survey. Health Psychology, 22(1), 111-116.

Kaplowitz, S. A., Campo, S., & Chiu, W. T. (2002). Cancer patients' desires for communication of prognosis information. Health Communication, 14(2), 221-241.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement, 30, 607-610.

Kim, J., & Park, H. A. (2012). Development of a health information technology acceptance model using consumers' health behaviour intention. *Journal of Medical internet Research, 14(5)*, e133.

Kline, R. B. (2011). Principles and Practice of Structural Equation Modeling (D. A. Kenny & T. D. Little Eds.Third ed.). New York, London: THE GUILFORD PRESS: A Division of Guilford Publications, Inc.

Knapp, C., Madden, V., Wang, H., Sloyer, P. & Shenkman, E. (2011). internet use and eHealth literacy of low-income parents whose children have special health care needs,   e75.

Knapp, C., Madden, V., Marcu, M., Wang, H., Curtis, C., Sloyer, P., & Shenkman, E. (2011). Information seeking behaviours of parents whose children have life-threatening illnesses, Pediatric Blood Cancer, 56 (2011), 805–11.

Kreps, G. L., & Neuhauser L. (2010). New directions in eHealth communication: opportunities and challenges. Patient Education and Counselling, 78(3), 329-336

Kruse, C. S., Argueta, D. A., Lopez, L., & Nair, A.(2015). Patient and provider attitudes toward the   use of patient portals for the management of chronic disease: a systematic review. *Journal of Medical internet Research, 17(2)*, e40

Kruger, S. H., Puoane, T., Seneka, M., & van der Merwe, T. M. (2005). Obesity in South Africa: challenge for government and health professionals. Public Health Nutrition, 8, 491-500

Koh, H. K., & Rudd, R. E. (2015). The arc of health literacy. *Journal of American Medical Association, 314(12)*, 1225–1226.

Kontos, E., Blake, K. D., Chou, W. Y., & Prestin, A. (2014). Predictors of eHealth usage: insights on the digital divide from the Health Information National Trends Survey 2012. *Journal of Medical internet Research 16*, e172.

Korb, K. (2012). Conducting Educational Research. Validity of Instruments. Retrieved from: http://korbedpsych.com/R09eValidity.html

Kothari, C. R. (2007). Research Methodology: Methods & Techniques, Revised 2nd edn, New Age International Publishers, New Delhi.

Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy, U. S. Department of education. Washington, DC: National Centre for Education Statistics

Kummervold, P. E., Chronaki, C. E., Lausen, B., Prokosh, H. U., Rasmussen, J., Santana, S., Staniszewski, A., & Wangberg, S. C. (2008). eHealth trends in Europe 2005–2007: a population-based survey. *Journal of Medical internet Research, 10*, e42.

Kwon, I.-W. G., & Xie, H. Y. (2003). internet use by physicians and its impact on medical practice-An exploratory study. Health Marketing Quarterly, 21(1-2), 5–27.

Laerd Statistics. (2013). Determining the correlation coefficient, Retrieved From: https://statistics.laerd.com/premium/pc/pearson-correlation-inspss-8.php

Lambert, S. D., & Loiselle, C. G. (2007). Health information-seeking behaviour. Qualitative Health Research, 17(8), 1006-1019.

Lao, X., Zhang, J., & Bai, C. (2013). The implication of telehealthcare in COPD management of China. Expert Review of Respiratory Medicine, 7(5):459-463

Lau, M., Campbell, H., Tang, T., Thompson, D. J., & Elliott, T. (2013). Impact of patient use of an online patient portal on diabetes outcomes. *Canadian Journal of Diabetes, 38(1)*, 17-21

Lee C. J. (2009). The Interplay between Media Use and Interpersonal Communication in the Context of Healthy Lifestyle Behaviours: Reinforcing or Substituting?. *Mass communication & society*, *13(1),* 48–66.

Lee, S. Y., Tsai, T. I., Tsai, Y. W., & Kuo, K. N.(2012). Development and validation of the short-form Mandarin Health Literacy Scale. Taiwan *Journal of Public Health, 31(2),* 184-194.

Lee, L., Arthur, A., & Avis, M. (2008). Using self-efficacy theory to develop interventions that help older people overcome psychological barriers to physical activity: A discussion paper. *International Journal of Nursing Studies, 45(11)*,1690-1699.

Li, N., Orrange, S., Kravitz, R. L., & Bell, R. A. (2014). Reasons for and predictors of patients' online health information seeking following a medical appointment. Family Practice, 31 (5), 550–556

Lobiondo-Wood, G., & Haber, J. (2013). Nursing research in Canada. Methods, critical appraisal, and utilization. 3rd Canadian edn. Toronto: Elsevier, 2013.

Longo, D. R. (2005). Understanding health information, communication, and information seeking of patients and consumers: a comprehensive and integrated model. Health Expectations, 8(3), 189-194

Llewellyn, C. D., Horne, R., McGurk, M., & Weinman, J. (2006). Development and preliminary validation of a new measure to assess satisfaction with information among head and neck cancer patients: The satisfaction with cancer information profile (SCIP). Head & Neck, 28(6), 540–548.

MacKinnon D.P. (2008). Introduction to statistical mediation analysis. Mahwah, NJ: Earlbaum.

Marton, C. (2011). Understanding how women seek health information on the web. (Doctoral dissertation, University of Toronto, Toronto).

McLean, S., Chandler, D., Nurmatov, U., Liu, J., Pagliari, C., & Car, J. (2011). Telehealthcare for asthma: a Cochrane review. Canadian Medical Association Journal, 183(11), E733-E742

Myneni. S. R. (2007). Legal Research Methodology, Reprint 3rd edn, Allahabad Law Agency, Haryana,

Manfredi, C., Czaja, R., Price, J., Buis, M., & Janiszewski, R. (1993). Cancer patients' search for information. *Journal of the National Cancer Institute Monographs, 14,* 93-104.

Manafò, E., & Wong, S. (2012). Assessing the eHealth literacy skills of older adults: A preliminary study. *Journal of Consumer Health On the internet, 16(4)*, 369-381

Marrie, R. A., Salter, A. R., Tyry, T., Fox, R. J., & Cutter, G. R. (2013). Preferred sources of health information in persons with multiple sclerosis: degree of trust and information sought. *Journal of Medical internet Research, 15(4)*, e67

McGrath, J., Nedal, H., Pugh, A., & Jacqueline, P. (2007). The influence of electronic medical record usage on nonverbal communication in the medical interview, *Health Informatics Journal, 13 (2),* 105-18

Monette, D.R., Sullivan, T.J. & Dejong, C.R. (2011). Applied social research: a tool for the human services. New York: Brooks/Cole Cengage Learning.

Mosa, A. S. M., Yoo, I., & Sheets, L. (2012). A Systematic Review of Healthcare Applications for Smartphones. BMC Medical Informatics and Decision Making, 12, 67

Mitsutake, S., Shibata, A., Ishii, K., & Oka, K. (2012). Association of eHealth literacy with colorectal cancer knowledge and screening practice among internet users in Japan. *Journal of Medical internet Research, 14(6),* e153

Ministry of Health. Malaysia. (2010). National Strategic Plan for Non-Communicable Disease (NSPNCD): Medium Term Strategic Plan to Further Strengthen the Cardiovascular Diseases and Diabetes Prevention and Control Program in Malaysia (2010-2014). Disease Control Division, Putrajaya: Ministry of Health Malaysia

Murray, E. (2011). Web-based interventions for behaviour change and self-management: potential, pitfalls, and progress. Medicine 2.0., 1(2), e3.

Nagler, R. H., Gray, S. W., Romantan, A., Kelly, B. J., DeMichele, A., Armstrong, K., & Hornik, R. C. (2010). Differences in information seeking among breast, prostate, and colorectal cancer patients: Results from a population-based survey. Patient Education and Counseling, 81(1), S54–S62.

National Health and Morbidity Survey (2015). Institute of Public Health, Ministry of Health Malaysia, Retrieved from: http://iku.moh.gov.my/index.php/research-eng/list-of-research-eng/iku-eng/nhms

Neter, E., & Brainin, E. (2012). eHealth literacy: extending the digital divide to the realm of health information. *Journal of Medical internet Research, 14(1)*

Nettleton, S., Burrows, R., & O'Malley, L. (2005). The mundane realities of the everyday lay use of the internet for health, and their consequences for media convergence. Sociology of Health & Illness, 27, 972–992

Noblin, A.M., Wan, T. T. H., Fottler, M. (2012). The impact of health literacy on a patient's decision to adopt a personal health record. Perspectives in Health Information, 9 (2012), 1e

Nölke, L., Mensing, M., Krämer, A., & Hornberg, C. (2015). Sociodemographic and health-(care-) related characteristics of online health information seekers: across-sectional German study. BMC public health, 15(1), 31

Norman, C. D., & Skinner, H. A. (2006). eHealth Literacy: Essential skills for consumer health in a networked world. *Journal of Medical internet Research, 8(2)*

Nordqvist, C., Hanberger, L., Timpka, T., & Nordfeldt, S. (2009). Health professionals' attitudes towards using a Web 2.0 portal for child and adolescent diabetes care: qualitative study. *Journal of Medical internet Research,11(2)*, e12

Nordfeldt, S., Ängarne-Lindberg, T., & Berterö, C.(2012). To use or not to use--practitioners' perceptions of an open web portal for young patients with diabetes. *Journal of Medical internet Research, 14(6)*, e154

Paek, H. J., & Hove, T.(2012). Social cognitive factors and perceived social influences that improve adolescent eHealth literacy. Health Communications, 27(8), 727-737

Park, D. J., Kwon, M. S., & Choi, J. H.(2013). The influence of health information orientation, attitude of internet health information, and e-Health literacy on personal health behaviours. *Journal of Public Relation Research, 17(3),* 379–413.

Park, H., Moon, M., & Baeg, J. H. (2014). Association of eHealth literacy with cancer information seeking and prior experience with cancer screening. Computers, Informatics, Nursing, 32, 458–463.

Perrin, A., & Duggan, M. (2015). Americans' internet access: 2000-2015. Retrieved from: http://www.pewinternet.org/2015/06/26/americans-internet- access-2000/2015

Piaw, C. Y. (2011) Kaedah dan statistik penyelidikan: kaedah penyelidikan. Mcgraw-Hill Education, Shah Alam. ISBN 978-967-5771-31-6

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. Behaviour Research Methods, Instruments, & Computers, 36(4), 717-731

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behaviour Research Methods, 40(3), 879-891.

Rates of non-communicable diseases in Malaysia worrying (2019). Retrieved from: https://www.malaymail.com/news/malaysia/2019/07/06/dzulkefly-rates-of-non communicable-diseases-in-malaysia-worrying/1768966

Rice, R. E. (2006). Influences, usage, and outcomes of internet health information searching: Multivariate results from the Pew surveys. *International Journal of Medical Informatics, 75(1),* 8–28.

Rice, R. E., McCreadie, M.., & Chang, S. L. (2001). Accessing and Browsing Information and Communication. Cambridge, MA: MIT Press

Rideout, V., Neuman, T., Kitchman, M., & Brodie, M. (2005). e-health and the elderly: how seniors use the internet for health information, Retrieved from: http://www.kff.org/entmedia/upload/e-Health-and-the-Elderly-How-Seniors-Use-the-internet-for-Health-Information-Key-Findings-From-a-National-Survey-of-Older-Americans-Survey-Report.pdf

Ruppel, E. K. (2016). Scanning health information sources: Applying and extending the comprehensive model of information seeking. *Journal of Health Communication, 21*, 208–216

Robinson, J., Thompson, T., & Tian, Y. (2006, June). Seeking cancer information on the internet: Antecedents and satisfactions. Paper presented at the annual conference of the International Communication Association, Dresden, Germany.

Shaw, B. R., DuBenske, L. L., Han, J. Y., Cofta-Woerpeld, L., Bush, N., Gustafson, D. H., & McTavish, F. (2008). Antecedent Characteristics of Online Cancer Information Seeking Among Rural Breast Cancer Patients: An Application of the Cognitive-Social Health Information Processing (C-SHIP) Model. *Journal of Health Communication: International Perspectives, 13(4),* 389-408.

Salman, A., & Hasim, M. S. (2009). Sustainability of internet usage: A study among Malay women in a sub-urban setting in Malaysia. *European Journal of Social Sciences, 9(3),* 433-447.

Schprechman, J. P., Gathright, E. C., Goldstein, C. M., Guerini, K.A., Dolansky, M.A., Redle, J., & Hughes, J. W. (2013). Health literacy and global cognitive function predict e-mail but not internet use in heart failure patients. Nursing Research and Practice, 507910

Sharit, J., Hernandez, M. A., Nair, S. N., Kuhn, T., & Czaja, S. J. (2011) Health problem solving by older persons using a complex government web site: Analysis and implications for web design. ACM Transactions on Accessible Computing, 3

Sheaves, B. Jones, R..B. Williamson, G. R., & Chauhan, R. (2011). Phase 1 pilot study of e-mail support for people with long term conditions using the internet. BMC Medical Informatics and Decision Making, 11(20), 1-10.

Shi, Y. (2007). The accessibility of Chinese local government Web sites: An exploratory study, Government Information Quarterly, 24, 377-403.

Shuttleworth, M. (2015). Internal Consistency Reliability. 2015. Retrieved From: https:// explorable.com/internal-consistency-reliability

Skinner, H. Biscope, S. Poland, B. & Goldberg, E. (2003). How adolescents use technology for health information: implications for health professionals from focus group studies. *Journal of Medical internet Research, 5(4),* e32.

Solomon, M., Wagner, S.L., & Goes, J. (2012). Effects of a web-based intervention for adults with chronic conditions on patient activation: online randomized controlled trial. *Journal of Medical internet Research, 14(1)*, e32

Spink, A., Yang, Y., Jansen, J., Nykanen, P., Lorence, D.P., Ozmutlu, S., and Ozmutlu, H.C. (2004).A study of medical and health queries to web search engines. *Health Information and Libraries Journal, 21*, 44-51.

Spinks, N., Wells, B., & Meche, M. (1999): Netiquette: A behavioural guide to electronic business communication. Corporate Communications: *An International Journal, 4(3),* 145-155.

Stellefson, M., Hanik, B., Chaney, B., Chaney, D., Tennant, B., & Chavarria, E. A. (2004). eHealth literacy among college students: a systematic review with implications for eHealth education. *Journal of Medical internet Research, 13 (4),* e102

Steyn, K., & Damasceno, A. (2006). Lifestyle and related risk factors for chronic diseases. In Disease and Mortality in Sub-Saharan Africa. Edited by: Jamison DT, Feachem RG, Makogoba WM, Bos RE, Baingana KF, Hofman JK, Rogo OK. Washington DC: The World Bank; 247-264.

Stryker, J. E.(2003). Media and marijuana: A longitudinal analysis of news media effects on adolescents' marijuana use and related outcomes, 1977–1999. *Journal of Health Communication, 8(4),* 305–328

Suziedelyte, A. (2012). How does searching for health information on the internet affect individuals' demand for health care services? Social Science & Medicine, 75(10), 1828–1835

Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z. & Brand H. Health literacy and public health: A systematic review and integration of definitions and models. 2012;12:80.

Tennant, B., Stellefson, M., Dodd, V., Chaney, B., Chaney, D., Paige, S., & Alber, J. (2015). eHealth Literacy and Web 2.0 Health Information Seeking Behaviours Among Baby Boomers and Older Adults. *Journal of Medical internet Research, 17(3),* e7

Tobi, S. N., Masrom, M., Syed Abd Rahaman, S. A., & Mohammed, A. (2017). MyHEALTH Portal: Malaysia National Web-Based Health Information Service for Public Well-Being. Advanced Science Letters. 23. 2853-2856. 10.1166/asl.2017.7719.

Torpy, J. M., Burke, A. E., & Golub, R. M. (2011). Health Literacy. *Journal of American Medical Association, 306(10)*

Urowitz, S., Wiljer, D., Dupak, K., Kuehner, Z., Leonard, K., & Lovrics, E. (2012). Improving diabetes management with a patient portal: a qualitative study of diabetes self-management portal. *Journal of Medical internet Research, 14(6),* e158

Utusan Online. (2014). Civil servants health screening centre in Putrajaya. Retrievedfrom:http://www.utusan.com.my/utusan/Dalam_Negeri/20140304/dn_05/ Pusat Pemeriksaan Kesihatan-Penjawat-Awam-di-Putrajaya

Van der Vaart, R., van Deursen, A. J., Drossaert, C. H., Taal, E., van Dijk, J.A., & van de Laar, M. A. (2011). Does the eHealth Literacy Scale (eHEALS) measure what it intends to measure? Validation of a Dutch version of the eHEALS in two adult populations. *Journal of Medical internet Research, 13(4)*, e86

Van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2011). internet skills performance tests: are people ready for eHealth? *Journal of Medical internet Research, 13(2)*

Van der Vaart, R., & Drossaert, C. (2017). Development of the digital health literacy instrument: measuring a broad spectrum of health 1.0 and health 2.0 skills. *Journal of Medical internet Research, 19(1),* e27

Vitacca, M., Mazzù, M., & Scalvini, S. (2009). Socio-technical and organizational challenges to wider e-Health implementation, Chronic Respiratory Disease, 6, 91

Von Wagner, C., Steptoe, A., Wolf, M. S., & Wardle, J. (2009). Health literacy and health actions: A review and a framework from health psychology. Health Education & Behaviour, 36(5), 860–877

Warren, J. R., Kvansney, L., Hecht, M. L., Burgess, D., Ahluwalia, J. S., & Okuyemi, K. S. (2010). Barriers, control, and identity in health information seeking among African-American women. *Journal of Health Disparities Research and Practice, 3(3),* 68-90

Wang, S., Beatty, S. E., & Foxx, W. (2004). Signaling the trustworthiness of small online retailers. *Journal of Interactive Marketing, 18(1),* 53–69.

Wagner, T.H., Baker, L.C., Bundorf, K., & Singer, S. (2004). Use of the internet for health information by the chronically ill. Preventing Chronic Disease,1(4)

Webb, T., Joseph, J., Yardley, L., & Michie, S. (2010). Using the internet to promote health behaviour change: a systematic review and meta-analysis of the impact of theoretical basis, use of behaviour change techniques, and mode of delivery on efficacy. *Journal of Medical internet Research, 12(1),* e4.

Wei, M. H. (2014). The associations between health literacy, reasons for seeking health information, and information sources utilized by Taiwanese adults. *Health Education Journal, 73*, 423–434

Wilson, T. D. (2000). Human information behaviour. Informing Science, 3(2), 49-56.

World Health Organization (WHO). (2016). Homepage of WHO. Retrieved from: http://www.who.int/en/ (accessed June 1, 2016).

Wert N, Hutton-Rogers L.(2013). Barriers to achieving eHealth literacy. American *Journal of Health Sciences, 4(3),* 115–120.

Wu, J.H., & Wang, S. C. (2005). What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. Information Management, 42, 719-729.

Xiao, Nan., Sharman, Raj & Rao, H.R., & Upadhyaya, Shambhu. (2014). Factors influencing online health information search: An empirical analysis of a national cancer-related survey. Decision Support Systems. 57. 417–427. 10.1016/j.dss.2012.10.047.

Xie, B. (2011). Effects of an eHealth literacy intervention for older adults. *Journal of Medical internet Research. 13(4),* e90

Yanovitzky, I., & Stryker, J. (2001). Mass media, social norms, and health promotion effects. Communication Research. 28 (2), 208–239.

Yoo, E. Y., & Robbins, L. S. (2008). Understanding middle-aged women's health information seeking on the web: A theoretical approach. *Journal of the American Society for Information Science and Technology, 59(4),* 577-590.

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2010). Business research methods (8th ed.). Mason, HO: Cengage Learning.

Zulman, D.M., Kirch, M., Zheng, K, & An, L. C. (2011). Trust in the internet as a Health Resource Among Older Adults: Analysis of Data from a Nationally Representative Survey. *Journal of Medical internet Research; 13(1):*e19

143