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Health Information Seeking and its Associated Factors among University Students: A Case in a Middle-Income Setting

Completed Research Paper

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Abstract

This paper aims to describe health information seeking behaviour and identify its associated factors among undergraduate university students in developing countries. An online survey is used to collect data from 138 students. The data is analysed using the multivariate logistic regression analysis method. Results reveal that a substantial number of students have sought health information mostly from the Internet. Health literacy, perceived susceptibility to health problems and alcohol consumption are found to be the significant factors influencing health information seeking behaviour. Results provide an understanding of health information seeking behaviour in developing countries.

Keywords: Health Information Seeking Behavior, University Students, Developing Countries, Malaysia

Introduction

Health Information Seeking Behavior (HISB) is the ways by which people obtain information about health, disease, health risk, and health promotion (Lambert and Loiselle 2007). It is very useful for health promotion activities and psychosocial adjustment to illnesses (Lambert and Loiselle 2007). HISB has the capability to shape health disparities by affording individuals with the health information needed to maintain a healthy lifestyle, deal with health problems, and to get the most out of interactions with healthcare givers. Thus, HISB has the potential to reduce knowledge gaps across societies and to educate individuals (Lee 2009).

Previous research studies on HISB focus on the high-income countries (Lalazaryan and Zare-Farashbandi 2014; Li et al. 2015) where many healthcare services are available (The World Bank 2013). A bibliometrics analytic study on Internet HISB identifies that the major research contribution on HISB is from high-income countries in North America, Europe, and Australia (Li et al. 2015). The study further identifies a very small number of publications from developing countries where there is a shortage of health-literate human power as well as infrastructure. The small number of publication from developing countries suggests the pressing needs for more HISB research in those countries. The same observation is also reported in Lalazaryan and Zare-Farashbandi (2014) which indicates the need for studies on HISB in developing countries.

Another characteristic of previous HISB studies is their focus on individual groups other than university students. Some research studies focus on parents and caregivers (Lwoga and Mosha 2013) while others on older adults (El-Attar et al. 2005; Eriksson-Backa et al. 2012; Medlock et al. 2012). There are also research studies focusing on health managers (Edwards et al. 2013), rural community (Mohd-Nor et al. 2013), and patients (Cutilli 2010; Wong et al. 2014). However, little emphasis has been given to the university students while they are at risk of chronic diseases due to sedentary behaviour (Deliens et al. 2015; Graham et al. 2014) which increases the chance of getting a disease that may kill youths prematurely (Biswas et al. 2015). Stress is also prevalent among university students (Griffin 2014) due to academic load, sleep problem, and homesickness (Beiter et al. 2015). University students are also at risk of risky sexual practices that they could be exposed to sexually transmitted diseases, unintended pregnancy, and chronic pelvic pain and inflammatory diseases (Rubens et al. 2014). Besides, the group is at high risk of using untrustworthy health information through social media networking due to lack of knowledge to judge health information (Banas 2008). In order to prevent the chronic diseases among young people, the World Health Organization recommended a strategy to ensure that health information is widely available and easily understood (World Health Organization 2003). Nevertheless, availability alone may not ensure that young people seek out and use health information. There is a need to precisely understand their HISB and examine its associated factors so that the result can be used for health promotional activities. Health promotion professionals can use the result of this study to promote health and improve the health status of the university population. Therefore, this research study aims to describe HISB and identify its associated factors among university students from developing countries. Specifically, the goal of this research is to answer the following research questions: 1) What source of health information that university students are using? 2) What type of health information that university students are seeking? 3) What are the factors associated with health information seeking behaviour among university students from developing countries?

Related Work

This section provides information about previous work on HISB and its associated factors from both developed and developing countries. Each subsection covers literature first from developed countries and then from developing countries perspectives. However, since there are limited studies done on HISB in developing countries, voluminous information is provided mostly from developed countries. The research studies from developed countries help to understand theoretical background of the topic under study and guide to develop the conceptual framework of this study. The studies are also helpful to adopt appropriate research methodologies to our study.

Health Information Seeking Behavior

Generally, HISB is characterised by 1) the health information sources used and 2) the type and amount of health information sought (Lambert and Loiselle 2007). This characterization is supported by the National Cancer Institute (National Cancer Institute 2014), which collects data about health information seeking in terms of source, type, and the amount of health information. A literature review on models and theories of HISB also supports that HISB can be characterised by the source, type, and extent of health information seeking (Lalazaryan and Zare-Farashbandi 2014). The next two subsections provide information about the source and type of health information sought.

Source of Health Information

People from developed countries use the Internet as a common source of health information. For example, a study done among college students in the United States of America shows that 78% of the students report having looked for health information online in the past year, and more than 37% report that they search for health information three or more times from the Internet (Percheski and Hargittai 2011). Another research from the Hong Kong Family and Health Information Trends Survey shows that the use of the Internet for health information has increased from 30.6% in 2009 to 35.6% in 2012 (Wang et al. 2013). The reasons for people from developed countries to use the Internet as the main source of health information are due to instant and easy access to the Internet (Cutilli 2010), and their adequate level of literacy (Nutbeam 2000) and awareness on online health information sources (Raj et al. 2015).

However, in developing countries, the most common sources of health information are physician (Muhammed KM and D'Souza 2014), television and radio (Gavani et al. 2013; Mohd-Nor et al. 2013), interpersonal communications (Gavani et al. 2013; Muhammed KM and D'Souza 2014), and

magazines and newspapers (Yuli et al. 2012). The use of the Internet for health information seeking in developing countries is presumably low. For example, a school-based study done among adolescents in Ghana identifies that out of all participants 35% of youths use the Internet to search for health information (Borzekowski et al. 2006). Similarly, a study done in China among the general public indicates that 59% of the participants use the Internet very often for preventive health information seeking (Yuli et al. 2012). In the rural community of Malaysia, the prevalence of HISB is also considerably low (46%) (Mohd-Nor et al. 2013). The low percentage of health information seeking in developing countries could be due to limited infrastructure and resources, and limited skill and knowledge in understanding and using technologies (Raj et al. 2015).

Type of Health Information

People with different goals, seek for health information to satisfy their needs (Fox 2011b). Some people search for illness (curative purposes), some for wellness (preventive measures), and others for both (Weaver et al. 2010). The wellness information can include personal and public hygiene, environmental protection, proper diet, and adequate exercise, whereas the illness information includes about disease or health problem control and treatment. The classification of wellness and illness information can help to determine distinct health motives for health information seeking (Weaver et al. 2010).

Research studies show that people from developed countries look for both wellness and illness information (Fox 2011a; Medlock et al. 2012; Weaver et al. 2010). The Pew Internet Survey Report indicates that the Internet users in the United States of America look for both wellness and illness information (Fox and Duggan 2013). Another study shows that adults look for both illness and wellness related information online with almost equal proportion of illness only-related (28.6%) and wellness only (30.8%) related information (Weaver et al. 2010).

However, it is worthwhile to note that people in developing countries mostly seek illness-related information (Gavgani et al. 2013; Muhammed KM and D'Souza 2014). They seek out information about specific disease control, illnesses, treatment choices, and drug and medication information. A community-based study done in China shows that illness-related information such as causes and symptoms of diseases, and diagnoses and treatments are the most popular information for the respondents to search using the Internet (Yuli et al. 2012). The respondents give less attention is paid to cholesterol, smoking cessation, blood pressure, diabetes, and stress managements (Yuli et al. 2012). Another study done in Ghana among adolescents indicates that the most popular information searched area is sexually transmitted disease which is illness information (Borzekowski et al. 2006). This shows that people from developing countries give less attention to preventive or wellness related information. The reason for people from developing countries to focus on illness-related information could be due to limited health knowledge (Nikbakht Nasrabadi et al. 2015) and the high level of communicable and non-communicable diseases (World Health Organization 2009).

Factors Affecting Health Information Seeking Behavior

Research studies from developed countries indicate that education and age are the most significant determinants of health information seeking behaviour (Fox 2011a; Kim 2015; Oh et al. 2012). The Pew Internet Project study identifies young people of age 18-29 years and college graduates as the most health information seekers in the United States of America. Even among health information seekers, youths and people with a university education are found to be more active information seekers than elderly and people with lower education level, respectively (Pálsdóttir 2008). Similarly, other research studies also point out that higher education is positively associated with online health information seeking (Kim 2015; Wang et al. 2013). Older people are also found to be less likely to search for health information when compared to the younger people (Medlock et al. 2012; Wang et al. 2013; Wong et al. 2014). This is due to shame and embarrassment, low health literacy level, and lack of interest to manage their own health among the older people (Cotten and Gupta 2004).

Gender difference on HISB is also present among university students. A study in the United States of America indicates that significantly more female students seek out health information than male students (Escoffery et al. 2005). In Singapore, male youths are found to be more likely concerned about their health compared to females; however, they are less likely to seek out health information from magazines and to consult physicians for their illness (Mokhtar et al. 2009). The reason why females look for health information more than males could be due to the trend in staying healthy which may be published in health magazines, as the authors claimed.

HISB can also be influenced by psychological factors, such as self-efficacy and perceived susceptibility to and perceived severity of health problems. People with high health self-efficacy are more likely to look for health information than people with low self-efficacy (Chen and Feeley 2014; Lee et al. 2008; Pálsdóttir 2008). High self-efficacy can also contribute to a shift in the role of people from passive to more active health information seeking. A research study shows that individuals with higher health self-efficacy tend to be more motivated for new information and actively seek out and use health information (Chen and Feeley 2014). The study also states that higher health self-efficacy can minimise health concerns and distress, which may motivate individuals to seek for health information. This conclusion is supported by a study done among women diagnosed with breast cancer (Lee et al. 2008). The study states that believing to control a disease together with high negative emotion looks to encourage patients to find more information. This indicates that HISB can be negatively influenced by low health self-efficacy and negative emotion.

Perceived susceptibility to and perceived severity of health problems have a direct influence on HISB. A research study integrates health belief model and technology acceptance model to investigate health-related Internet use among women in Malaysia (Ahadzadeh et al. 2015). The result indicates that perceived health risk, which consists of perceived susceptibility to and perceived severity of health problem, has a positive effect on Internet use for health information. Which implies, women with higher level of perception about health risks are more likely to use the Internet for health-related information than women with low level of perceived health risk. Similarly, a study has also measured perceived health risk through perceived seriousness and perceived susceptibility scale to study consumers' disease information seeking behaviour on the Internet in Korea (Yun and Park 2010). The study has found that consumers with a higher level of health risk perception are more likely to seek for disease information on the Internet. Therefore, psychological variables play a major role for health information seeking. However, the impact of these variables is not explored among students in developing countries.

Behavioural factors are the other variables influencing HISB. Research studies from developed countries show that behavioural factors, such as physical activity and smoking influence HISB. For example, smokers and physically inactive people are less likely to look for health information (Wang et al. 2013; Weaver et al. 2010). Weaver et al. (2010) indicate that there is a strong association between type of health information (wellness and illness) and physical activity. Wellness information seekers are the most likely to engage in physical activities. Wang et al. (2013) also identify the relationship between the frequency of health information seeking and physical activity. The study by Wang et al. (2013) states that being physically active is related with monthly health information seeking. In another study in Iceland, it is found that physically inactive people tend to be passive (unintentional) health information seekers (Pálsdóttir 2008). However, the effect of behavioural factors on HISB is not explored from developing country view. Smoking and physical inactivity are prevalent among young adults in developing countries. These factors are the main risk factor for number one killers, cardiovascular diseases which affect middle and low-income countries most. Hence, it is necessary to study the effect of smoking and physical inactivity on HISB from developing countries perspective.

The other factor affecting HISB is health literacy. A research study shows that low levels of health literacy are associated with problems in providing accurate medical history, completing medical forms, and understanding instructions for drug prescriptions (Manganello 2008). These problems may influence disease treatment decisions and outcomes, as there is a strong association between health literacy and health outcomes. Another study supports that people with inadequate health literacy are 68% less likely to look for health information than people with adequate literacy (Gutierrez et al. 2014). Similarly, other studies done in Australia and Finland identify that people with limited health literacy are less likely to look for health information (Ellis et al. 2012; Eriksson-Backa et al. 2012). The qualitative study done in Australia (Ellis et al. 2012) indicates that participants with a high level of health literacy exhibit the most engagement in HISB. However, participants with a low level of health literacy show little or no engagement in HISB, simply accepting information from health providers.

Theoretical Framework

Longo's 2010 expanded model of HISB and the Health Belief Model (HBM) are used to develop the conceptual framework of this research. The Longo's 2010 model is chosen because it takes into account the list of the contextual and personal factors affecting HISB (Longo et al. 2010). Furthermore, the model considers passive health information seeking in addition to active health information seeking. This fills the gaps in the current HISB literature in developing countries

considering that people in developing countries are not just active information seekers as identified by previous research studies (Gavvani et al. 2013; Mohd-Nor et al. 2013; Muhammed KM and D'Souza 2014). People can receive health information passively in addition to active health information seeking. Moreover, the model is well known by the US National Cancer Institute (Treiman and Squiers 2005) cited in (Longo et al. 2009). Even though the model is initially developed for cancer-related information, it can be applied to other health information with minor modifications (Longo et al. 2010).

The limitation behind in the Longo's model is that it doesn't consider psychological factors affecting HISB. The factors are perceived susceptibility to and severity of health problems and health self-efficacy, which are well described in the HBM (Rosenstock 1974). The factors in the model are considered as driving forces behind health information seeking. Together with health information seeking, the factors are central to health-related perceptions and behaviour for health outcome. Combining Longo's model and HBM enables us to have a comprehensive conceptual framework that includes the factors contributing to and the barriers inhibiting HISB. Therefore, based on the above two models, a combined conceptual framework of this research is developed (Figure 1).

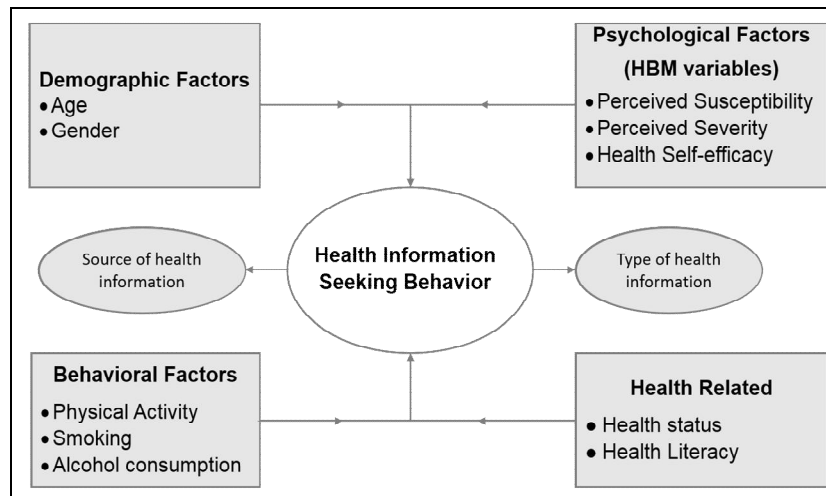


Figure 1: Conceptual Framework of Health Information Seeking Behavior

The variables in the conceptual framework (Figure 1) are selected because of their health influence in a university population. For example, psychological factors such as self-efficacy, which is the driving force behind health information seeking (Rosenstock 1974), is influenced by stress which is prevalent among university students due to academic load, sleeping problem, and homesickness (Torres and Solberg 2001). Behavioural factors, such as smoking, unhealthy diet, and physical inactivity are also prevalent among young population (Rahman et al. 2014). These factors are the most risk factor for cardiovascular diseases which are the number one cause of death that contribute to premature deaths globally and in Malaysia (Ministry of Health Malaysia 2008; World Health Organization 2014).

Methodology

Research Setting

This study is undertaken in Malaysia as a case of developing country (The World Bank 2015). According to the Malaysian Communications and Multimedia Commission, the Internet penetration rate of the country is about 67% (Malaysian Communications and Multimedia Commission 2015). The highest percentage of the Internet users (24.2%) belongs to the age group of 20-24 years with an average age of users being 31.1 years. However, the percentage distribution of the non-Internet users in the age group 20-24 years is 8.2% with the average age of 46.4 years. Most of the Malaysian Internet users (24.1%) are from the state of Selangor.

This study is conducted in a university in Malaysia which is situated in the state of Selangor. The University is an international institution encompassing international students from more than 50 developing countries. This gives an opportunity to include more international students from other developing countries. As of March 2014, there are 5, 806 students enrolled in the university out of which 26.5% of them are international students from mainly developing countries.

Research Participants

All undergraduate students from developing countries enrolled in the university are considered as source population while sampled students are taken as the study population. Undergraduate students from developing countries enrolled in the university are included as study participants. However, students from health related discipline are excluded due to the fact that these students are most likely to be more well-verse in health knowledge which may have the potential to affect the result of the study.

Sampling

A total sample of 138 participants is selected from a university in Malaysia. Convenience sampling technique is used to select the sample subjects in the university. Convenience sampling allows to easily access participants in and outside classrooms.

Data collection tool

A web-based survey is used to obtain information about HISB, socio-demographic, health-related, behavioural, and psychological factors. The questions are adopted mainly from the 2014 US Health Information National Trends Survey (National Cancer Institute 2014). The survey is a nationally representative survey administered by the US National Cancer Institute in a targeted population of aged eighteen and above. The survey questions are designed using Google Forms which is a tool used to create and analyse surveys. The survey is piloted in 15 students before the actual data collection begins.

HISB is measured using a question from the United States Health Information National Trend Survey (HINTS). The Consumer Health Informatics Research Resource (CHIRr) describes the question as the most common approach to measure health information seeking (Hensel et al. 2013). The question is: "Have you ever looked for information about health or medical topics from any source?" (National Cancer Institute 2014). Following this question, source and type of health information are asked.

Physical activity, health self-efficacy, perceived susceptibility to a health problem, and perceived severity to a health problem are measured using questions from the United States HINTS (National Cancer Institute 2014). However, the scales are originally developed by previous research studies. For example, self-efficacy by Lee et al. (2008) with Cronbach Alpha = 0.84, and perceived susceptibility and perceived severity by Witte et al. (1996) with Cronbach Alpha = 0.85. Two item questions are used to measure physical activity: 1) "In a typical week, how many days do you do any physical activity or exercise of at least moderate intensity, such as brisk walking, bicycling at a regular pace, and swimming at a regular pace?" 2) "On the days that you do any physical activity or exercise of at least moderate intensity, how long do you typically do these activities?" To measure health self-efficacy, a single item question is used: "Overall, how confident are you about your ability to take good care of your health?" Similarly, perceived susceptibility to a health problem is measured using a single item question: "How concerned are you about getting any health problem?" (National Cancer Institute 2014). Perceived Severity of a health problem is also measured using a single item question: "How getting a health problem would affect your life?" (National Cancer Institute 2014).

Health literacy is measured using a tool from the European Health Literacy Survey (HLS-EU) (Sorensen et al. 2013). The Asian Health Literacy Association adopted the tool to be used by researchers in Asian countries (Asian Health Literacy Association (AHLA) 2013). Furthermore, a study is undertaken to assess the validity and internal reliability of the tool in Malaysian context (Mohamad et al. 2014). This study found high reliability; and concluded that the tool can be utilised in the Malaysian context. Therefore, the 47 item HLS-EU questionnaire in a measure of 4 scales (from 1=very difficult to 4=very easy) is used to determine the health literacy of the participants under study.

Data collection procedure

Students are approached and invited to participate in the study through personal communications made at the end of their class. First, a short introduction to the study and its purpose are explained to the students. In addition, the students are told that participation in the study is on a voluntary basis. After they agreed to participate in the study, an appointment is made. Upon arrival, the students receive an explanatory statement that describes the research and the data collection procedure. Then, they are requested to review and sign an informed consent form and complete the survey questions.

Data management and analysis

The data from the online survey is downloaded from Google Forms in the form of excel sheet and then transferred to SPSS version 22 for coding and analysis. Descriptive statistics is used to explain health information seeking and socio-demographic characteristics of the respondents. In addition, binary logistic regression analysis method is used to identify factors associated with HISB. We select a stepwise logistic regression method as it controls confounding effect which occurs when a variable correlates with both dependent and independent variables which affect a statistical outcome (Sterne and Kirkwood 2003). Odds ratio with 95% confidence interval is computed to determine the strength of association between health information seeking and its predictors. All assumptions and model fitness are tested. A p-value of 0.05 is used as a cutoff value for statistically significant findings.

Result

Socio-demographic Characteristics

A total of 138 undergraduate students participates in this study. Most of the participants are Malaysian (82.6%). In terms of discipline, the majority (42.8%) of the participants are from engineering. All the disciplines are a three years program except engineering which is a four-year program. The mean age of the participants in years is 20.8 ± 1.27 SD with a minimum and maximum age of 17 and 24 years. Chinese is the mother tongue for the majority (52.9%) of the participants followed by English (23.2%). The demographic distribution of the participants is presented in Table 1.

Demographic characteristics	Category	Percentage (%)
Gender	Male	56.5
	Female	43.5
Nationality	Malaysian	82.6
	Sri Lankan	5.8
	Indonesian	4.4
	Mauritian	3.6
	Others*	3.6
Year of study	1st Year	29.7
	2nd Year	27.5
	3rd Year	27.5
	4th Year	15.2
Mother tongue	Chinese	52.9
	English	23.2
	Sinhalese	5.1
	Chinese & English	1.4
	Others	17.4
Field of study	Engineering	42.8
	Business	31.9
	Information Technology	15.9
	Art & Social Science	5.1
	Science	4.3

* Other nationalities include Bangladesh, Maldivian, Pakistani, Omani and Sudanese

*** Other mother tongue include Arabic, Bahasa Indonesia, Bengali, Cantonese, Creole, Dhivehi, Hokkien, Memon, Hakka, Punjabi, Tamil

Table 1: Demographic Distribution of University Students

Health Information Seeking Behavior

About 80% of the respondents reported having sought out health information predominantly using the Internet. Out of 110 health information seekers, 84.5% of them prefer the Internet as their primary source. Respondents use Google as the most preferred search engine to search for health information. WebMD and Wikipedia are the second and third choice of the respondents to locate health information. Participants are also found to use social media to receive and share health information. About 69% of online health information seekers use social media for health information in which Facebook (70%) and YouTube (20%) being the first and second most frequent social networking sites used, respectively. Other social networking sites include GooglePlus+ (5%), Instagram (2%), WhatsApp (2%), and Twitter (1%). Participants prefer also their family, friends, and doctors as their second, third, and fourth choices to look for health information, respectively. Among their family members, participants prefer to consult their mother for health information more than their father. Other sources of health information include books, newspaper, magazines, and brochures. Figure 2 shows the preferred source of health information participants sought in their most recent time.

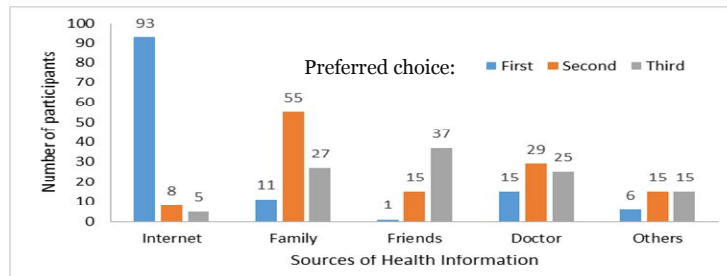


Figure 2: Preferred Sources of Health Information among Students

Regarding the type of health information, participants have sought both wellness and illness information. The most frequent wellness information identified are about fitness, diet, and skin health whereas the illness information is about mental health problems, medication, cancer, and diabetes. Other health information that the students sought is presented in figure 3.

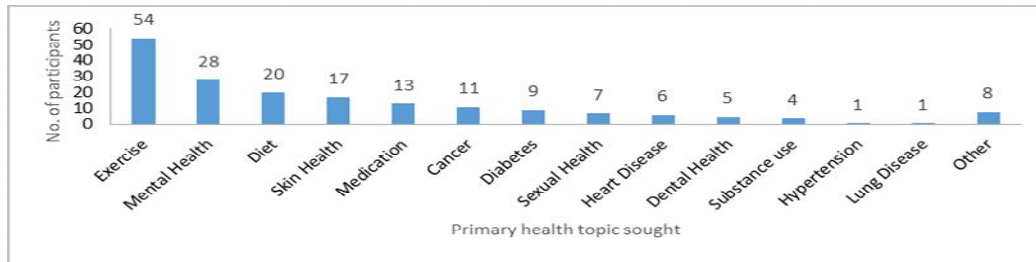


Figure 3: Health information sought

Factors Associated with Health Information Seeking Behavior

Demographic characteristics (gender and age), behavioural (smoking, alcohol consumption, and physical activity), psychological (perceived susceptibility, perceived severity, and health self-efficacy), and health related (health status and health literacy) factors are used as independent variables to fit into the logistic regression model. Out of all the independent variables fitted to the logistic regression model, only three variables (health literacy, perceived susceptibility to a health problem, and alcohol consumption) are found to have a significant association with health information seeking. With regard to health literacy, students who have adequate health literacy level are three times more likely to seek for health information than those who have limited health literacy level [AOR = 3.09; 95% CI (1.24, 7.74)]. Regarding alcohol consumption, currently-drinkers are 3.36 time more likely to seek for health information than those who are not currently-drinkers [AOR = 3.36; 95% CI (1.11, 10.15)]. The third variable having a significant association with health information seeking is perceived susceptibility to health problems. Those students who are not concerned at all about getting health problems are 7% [AOR = 0.07; 95% CI (0.01, 0.51)] less likely to seek health information than those who are very concerned. Similarly, students who are concerned about getting health problems are 10% [AOR = 0.1; 95% CI (0.02, 0.51)] less likely to seek health information than those students who are very concerned about getting health problems. The output of the logistic regression table is presented in Table 2.

Variables	Category	Health Information Seeking		AOR (95% CI)	P-value
		Yes n(%)	No n(%)		
Gender	Male	64(58.2)	14(50)	1	
	Female	46(41.8)	14(50)	0.82(0.29, 2.28)	0.699
Age, mean = 20.78, median = 21	NA	NA	NA	0.89(0.58, 1.36)	0.587
Health literacy	Limited	25(22.7)	12(42.9)	1	
	Adequate	85(77.3)	16(57.1)	3.16(1.03, 9.66)	0.044
Health status	Feel healthier	80(72.8)	20(71.4)	1	
	Less healthier	30(27.3)	8(28.6)	1.26(0.38, 4.10)	0.706
Smoking	Currently not smoker	93(84.5)	24(85.7)	1	
	Currently smoker	17(15.5)	4(14.3)	0.63(0.15, 2.57)	0.517
Alcohol consumption	Currently not drinker	35(31.8)	13(46.4)	1	
	Currently drinker	75(68.2)	15(53.6)	3.36(1.11, 10.15)	0.032
Physical activity	Inactive	77(70)	20(71.4)	1	
	Active	33(30)	8(28.6)	1.04(0.35, 3.05)	0.951
Health self-efficacy	Confident	49(44.5)	11(39.3)	1	
	Not confident	61(55.5)	17(60.7)	0.65(0.23, 1.78)	0.399
Perceived severity of health problem	Make me sick	99(90)	25(89.3)	1	
	Not a big deal	11(10)	3(10.7)	1.72(0.31, 9.56)	0.535
Perceived susceptibility to health problem	Very concerned	41(37.3)	2(7.1)	1	0.013
	Concerned	59(53.6)	20(71.4)	0.10(0.02, 0.51)	0.005
	Not concerned at all	10(9.1)	6(21.4)	0.07(0.01, 0.51)	0.008

1 = reference category

Table 2: Result of the Multivariate Logistic Regression Analysis

Discussion

Three research questions are introduced to guide this study: 1) What source of health information that university students are using? 2) What type of health information that university students are seeking? 3) What are the factors associated with health information seeking behaviour among university students from developing countries? This discussion will begin with the first research question. About 78% of the students have sought health information mostly from the Internet. Among the health information seekers, 84.5% of them prefer the Internet as the main source of health information. The good Internet skills which are cultivated through university education (Janeice et al. 2013) and the availability of the Internet in university campuses seem to motivate the students to choose the Internet as the main source of health information.

Google, which is a general purpose search engine, remains the most preferred search engine for participants to search for health information. Health specific search engines (e.g. WebMD and MedlinePlus) are rarely used. This could be due to lack of awareness on health-specific search engines (Raj et al. 2015). Similar finding is observed from other studies in developing countries such as Iran (Gavani et al. 2013), Southeast Asia (Inthiran and Soyiri 2015), Malaysia (Inthiran et al. 2013), China (Yuli et al. 2012), which indicate Google as the main search engine used for health information. General purpose search engines are useful for basic searches, but they may not be helpful for multifaceted search tasks which need multiple search sessions and continuous interactions (Pang et al. 2014). Hence, it is essential to promote health-specific search engines which can support searchers who need a deeper understanding of health topics. Participants use their family as the second preferred choice to look for health information. Among their family members, the participants prefer their mother more than their father to seek health information. This could be because mothers have a special attachment to young adults (Markiewicz et al. 2006).

The second research question is about the type of health information. The main reasons for participants to seek health information in their most recent time are to seek information about fitness, diet, skin health, mental health problems, medication, cancer, and diabetes. This shows that the

students seek for both wellness (fitness, diet, and skin health) and illness (mental health problems, medication, cancer, and diabetes) information. This finding is different from other research studies from developing countries which indicate that people from developing countries are mostly illness related seekers (Mohd-Nor et al. 2013; Muhammed KM and D'Souza 2014; Sharif et al. 2015). The reason for the university students to pay attention to both wellness and illness-related information could be due to their adequate level of health literacy (73.2%) which is identified in this study. A research study done in Australia (Ellis et al. 2012) indicates that participants with a high level of health literacy exhibit the most engagement in health information seeking.

The third research question is about the determinant factors influencing HISB. Among all the variables entered into the logistic regression model, health literacy, perceived susceptibility to health problems, and alcohol consumption are found to have a significant association with HISB. Participants with an adequate level of health literacy are three times more likely to look for health information than students with limited health literacy level. This finding is in line with a study by (Gutierrez et al. 2014) which shows that people with inadequate health literacy are 68% less likely to seek for health information than people with adequate health literacy. This is because people with adequate health literacy can easily understand health terminologies and get motivated to seek health information (Manganello 2008).

Similarly, alcohol consumption is found to be a predictor of health information seeking. Current drinkers are three times more likely to seek for health information than those who are not currently drinkers. This could be due to their higher perceived susceptibility (63.9%) to and severity (68.5%) for health problems which are identified in this study. This finding is similar to a study which identifies alcohol drinkers to more likely seek health information than never drinkers (Wang et al. 2013).

Perceived susceptibility to a health problem is the other factor identified to influence health information seeking. Participants who are 'not concerned' and 'concerned' about getting health problems are 7% and 10% less likely to seek health information than participants who are very concerned about getting health problems, respectively. This finding is in line with the theory from the Health Belief Model which states that people having perceived susceptibility to a health problem are more likely to take action to reduce the risk of acquiring that health problem (Rosenstock 1974). Results of previous research studies support this finding that people tend to look for health information when they consider themselves more susceptible towards a health problem (Ahadzadeh et al. 2015; Mills and Todorova 2016).

Demographic variables such as age and gender are not found to be predictors of health information seeking in this study. Even though previous research studies indicate age as the most significant predictor of health information seeking (Kim 2015; Muhammed KM and D'Souza 2014; Wang et al. 2013), in this study, it is not found to be a predictor. This could be due to the age distribution of the study participants which seems to be similar (mean = $20.78 \pm 1.27SD$ and range = 17-24). While there is a gender difference in health information seeking among university students from developed countries (Escoffery et al. 2005; Mokhtar et al. 2009), in this study, no significant difference is found between female and male students. Similarly,

Conclusion

This study finds a significant proportion of students seeking for health information. The main source of health information the university students are using is the Internet. Social networking sites such as Facebook and YouTube are found to be useful sites to receive and share health information. Hence, health educators and promoters could use these social networking sites as a potential tool to spread health messages.

The most common health information type that the university students have sought are fitness, diet, skin health, mental health problems, medication, cancer, and diabetes. Promoting Internet-based health information systems which provide information that is consistent with the health information needs of the university population is important.

In this study, health literacy, perceived susceptibility to health problems, and alcohol consumption are found to be the predictors of health information seeking. Adequate health literacy is a motivation for health information seeking as it increases understanding of health information (Manganello 2008). Health literacy skills can enable students to be able to access, evaluate, and utilise health information so as to enhance health outcome (Manganello 2008). Hence, it is crucial to equip students with adequate health literacy through health education in university settings.

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