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A Study on the Women's Use of Social Media & Breast Cancer-related Health Information-Seeking Behavior: Utility of Information Channel as a Mediator

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Abstract *Social media is quickly becoming the most available and easiest source for seeking health information due to the emerging popularity of social media among people where everyone is expected to be online and connected to social media. This research was carried out to examine women's online breast cancer-related information-seeking behavior. The comprehensive model of information seeking (CMIS) was tested in Pakistan in order to examine the information-seeking behavior of women. Another significant factor of social stigma was added as an independent variable into the existing model. Researchers hypothesized that the utility of information channels plays a role of mediator in the association amongst the factors, i.e. demographics, social stigma, direct experience, salience, beliefs, and characteristics in the information-seeking behavior about breast cancer. The survey questionnaire was distributed among Six hundred women from Islamabad by using the convenient sampling technique. Researchers collected the data by already developed scales. Statistical test of Multiple Linear Regression was employed by the researchers. Therefore, the study carried out significant findings.*

Key Words: Health Information Seeking Behavior, Social Media, Comprehensive Model of Information Seeking, Social Stigma, Breast Cancer, Women

Introduction

Breast cancer has turned out to be the most rampant ailment among Pakistani women. (Arshad et al., 2019). When it comes to Breast Cancer cases, Pakistan is at the top of the list. Among every 9 women across the country, one is afflicted with Breast Cancer (Naz et al., 2016). In Asia alone, Pakistan is number one in the list of the countries with the most frequently occurring cases of this disease. If one is to believe the statistics, this disease takes away the life of nearly 40,000 women every year in Pakistan. (The Pink Ribbon Pakistan, 2020). If modern detection methods are used, this disease can be caught at a much earlier stage, and deaths can be avoided effectively. As if the disease is diagnosed earlier, the chances of survival will be better (Agha & Rind, 2021. lack of know-how among Pakistani women regarding the risk factors of this Breast Cancer is one obvious reason for the proliferating number of cases. Almost all of the researchers have come to the conclusion that this lack of information among women has been the leading cause of low survival or high mortality rates (Agha and Tarar, 2019; Gulzar, 2019).

Breast Cancer is a menace that looms large over women residing in Pakistan. Unawareness and lack of education are the two most evident factors of why there are so many cases of this disease, but there is another factor that is covert and difficult to see id the factor of the reluctance of disclosure of having this disease; disclosure of this disease is a social stigma/taboo in Pakistan. Discussing breast Cancer is difficult for the victim as it could draw people's negative reactions. Social Stigma, when it comes to the discussion of breast-related problems, is simply too high in Pakistani society (Naqvi et al., 2016).

Researches have shown that women in Pakistan are increasingly reluctant to disclose and discuss Breast Cancer disease because of Social Stigma (Maqsood et al., 2009). It is a fact that women in Pakistan live in an unwelcoming atmosphere, whereby when they contract such a disease, they face social obstacles; therefore, victims of Breast Cancer are not welcomed in a friendly manner by the nearby people, and this fact has been reflected through the outcome of many researches.

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Women in Pakistan are considered as a 'prestige' and 'honor' of their respective families. Those women that discuss their private matters openly are frowned upon and face extreme repulsion by their family members. Breast Cancer victims become mentally traumatized by the limits that are imposed on them by Pakistani society as it's a disease related to social taboo (Mukhtar, 2015).

Such obstacles, due to which women keep their issues to themselves, make them suffer, but then after suffering for a long time period, a moment arrives when such sufferings can't remain covert any more, and revelation has to be made.

When a woman gets afflicted with such social obstacles and suspects that she has contracted a disease due to noticing the symptoms, secret ways of acquiring information becomes inevitable for her to know the possible remedies. Internet, these days, is being used to an unprecedented degree in Pakistan and, therefore, social media are commonly being used by women to acquire knowledge about the issues they face, especially health issues (Van Stee & Yang, 2018; Volkman et al., 2014).

Social stigma is the disapproval of, or discrimination against, a person based on perceivable social characteristics that serve to distinguish them from other members of society. Social stigmas are commonly related to culture, gender, race, socioeconomic class, age, sexual orientation, intelligence, and health. However, in the present study, the factor of social stigma in seeking information regarding breast cancer has been used to predict online cancer information-seeking behavior via the utility, just like the other factors related to health in the CMIS. By using social media, women search the Breast Cancer information online without even making others realize that they are in need to find out information about this particular disease. (Muhamad et al., 2011).

Breast cancer is noticed to be proliferating at an unprecedented rate. A study conducted by Amin et al., 2020) claims that the breast cancer disease occurrence rate in the country of Bangladesh had is 22.5 out of every 100,000 women. The participants were found to be having a severe shortage of information and awareness and faced perceived impediments when it came to Breast cancer screening. Breast cancer was assessed to be associated more with occupation, marital status, and personal history. Non-effective awareness programs, being devoid of the necessary basic knowledge, fear, and Shyness were the substantial perceived impediments. They found that a lower degree of awareness in Bangladeshi women regarding Breast cancer could be due to socio-cultural factors that keep women from breast screening, as well as the lack of performing BSE. More frequently occurring awareness programs and effective dissemination of information could drastically lower the cases.

Breasts are a symbol of femininity, sexuality, and childbirth and hence play a role in how society views breast cancer. In 1963, Goffman observed by pointing out that people with socially marginalized persons face stigmas such as those resulting from illnesses, undesirable features result in a "shattered identity," which leads to social problems. Discrimination and devaluation are two words that come to mind when thinking about discrimination. This feminist ethnographic study is qualitative investigates how to interpret breast cancer in a patriarchal society and what it means to be a woman. As a result that, there is a stigma attached to it (Taskeen Mansoor, 2020). The cultural influences, among other things, shape women's experiences with breast cancer, particularly in terms of their femininity. Women's bodily experiences are taboo in Asian traditional society, according to some critics.

Women, while using the social media platforms, reach the Breast Cancer information online as they search for symptoms, and while doing so, they don't even have to tell their families that they are facing any problems (Muhamad, Afshari & Mohamed, 2011). When women resort to social media, they even are able to know some possible life hacks that could lead them to a better lifestyle. They are even able to know what medications can they use or possible treatment options. These are the scenarios where social media takes health information to new lofty heights as it ensures new methods of acquiring information that is covert. Social media ensure users' privacy. This is an immensely important step that could play a pivotal role in the reduction of cases of disease and mortality rates (Mansour et al., 2018).

According to Johnson (2003), information-seeking behavior is a phenomenon that happens to take place on purpose, as it is deliberate and is also goal-oriented. Health-information seeking behavior manifests itself as a requirement, plus the ways in which people try to find and apply the knowledge that relates to the respective disease, symptoms, and diagnosis (self-assessment or examination by the health expert), precautionary measures, as well as treatment. This study focuses on social media, which includes support groups or medical groups on Twitter, YouTube, Facebook, Linked In, or online forums. Akakandelwa and Walubita (2017) are of the view that social media are the entities that enable their users to reach one another online in a way that they share knowledge regarding respective issues. These Media also empower the users to communicate or edit/delete the user-generated information. These online Social media groups are akin to online societies, where

users can generate new information or share already available information. In these online societies, people with similar interests get together and are able to effectively communicate with one another (Sharma & Shukla, 2016; Smock et al., 2011). Social Media lets the users stay in contact with one another and share new developments (Cotten & Gupta, 2004).

Social Media are powerful entities that enable users to privately share information within the groups and make sure that their identities remain anonymous while generation and sharing information through different methods, including videos, graphics, etc. This could include the latest health-related developments that fit the needs of almost every person of the group, etc. Additionally, the comprehensive model of information seeking is a framework famous among the researchers and is very effective in studying the HISB predictors and particularly pertains to the information-seeking phenomenon that relates to cancer (Ibinaiye, 2021). This model makes available a framework that helps the researchers in predicting the health information seeking behavior built on attributes and perceptions of those who seek information (Johnson & Meischke, 1993). In his book, Johnson (1997) mentioned information-seeking as "purposive acquisition of information from selected information carriers" (p. 26).

The model was developed with the guidelines of two famous theoretical foundations, i.e. Health Belief Model and Uses & Gratification Theory. The CMIS (Johnson & Meischke, 1993) was established to be used in the orthodox media contexts. The model examines the antecedents of information-seeking behaviour, for instance, personal experiences that pertain to the disease, personal relevance (a combination of personal beliefs and salience), and demographic attributes (Johnson, 1997). According to this model, the antecedents make a user start with the search behavior, help him/her with regulation while choosing the information carriers and search skill sets. The information- carrier attributes also help in determining the choices that consumers make and carve out the base of the search process (Johnson, 1997). For instance, seeking health information on Television would be comprised of a different approach than on the internet or any provided magazine papers.

Demographics

Researchers associated with information-seeking behavior (Van & Yang, 2018) most of the time concentrate on information that relates to cancer, which includes nearly all of the demographic attributes that include Age, Race, Gender, income, and education.

Direct Experience

Direct experience, put forward by Johnson and Meischke (1993), is a concept that includes the disease experience, containing the individuals themselves and the others that they meet within their social circles (Van & Yang, 2018).

Salience

Salience, in CMIS, concerns the problems that pertain to health. Salience, as defined by Johnson and Meischke (1993), "health information that is of considerable importance to any individual is related to the extent to which the individual feels the perceived health threat" (p. 347).

Beliefs

As is it associated with health information-seeking behavior, individuals who think that there are certain points they are able to exercise to bring improvement in their health or to preserve their contemporary fitness must be more curious to seek information associated with health than the ones who view themselves as unable to do anything to alter their current health status.

Information-Carrier Characteristics

In the CMIS, factors that tend to transmit information are inclusive of Utility and Information-carrier features. A study that has been conducted earlier also bolsters the proposal that information-carrier features directly as well as indirectly (through the means of utility) profoundly affect the HISB (Johnson & Meischke, 1993). Johnson and Meischke (1993) found, in an experiment related to the model with conventional media, that the route that was stoutest in the CMIS had been the one that comes up from information-carrier features to the utility of information channels.

Utility of Information Channel

According to Johnson and Meichke (1993), utility, the other factor that carries information, plays a pivotal part in the CMIS as it acts as a mediator between the relationship of health-concerned factors and information-carrier features on health information-seeking behavior. They define the utility as

the extent to which information travelling through any medium fulfils the requirements that an individual seeks, defined in prior studies as faith in the source from which the information emanates and perceived capability to reach that information (Hamilton and Klabunde, 2015). The utility is defined as the extent to which, in a given medium, information fulfils the requirements that an individual tends to seek (Johnson & Meischke, 1993); it has been put forward in various prior studies as belief in the source from where the information emanates perceived capability to reach that information (Hartoonian et al., 2014).

Numerous researchers (Ibinaiye, 2021; Ruppel, 2016; Han et al., 2010; Grasso & Bell, 2015; Li et al., 2014; Van Stee & Yang, 2018; Basnyat, Nekmat, Jiang & Lin, 2018; Bernadas and & Jiang, 2019) used CMIS as the basis for their work. They prioritized the expansion of the CMIS framework in order to predict the online health information seeking behavior about Facebook, Twitter, healthcare providers, cancer patients or fighters, kidney failure or transplant, strokes, and other associated diseases. Investigators have added the resultant variables, for instance, gratification with the process of searching information (Robinson et al., 2006) and have applied the CMIS method to online scanning of the information pertaining to health. (Ruppel, 2016).

Basnyat, Nekmat, Jiang and Lin (2018) deemed the internet as one of the antecedent factors, and the factor of personal relevance salience is further distributed into two aspects are the severity and susceptibility. They examined the relationship present between antecedents associated with health, factors that carry information, and their influence on seeking information online using the Structural Equation Modelling Analysis. Additionally, Xiao et al. (2020) used the CMIS as a theoretical framework in predicting smoking-related information seeking. They found in their research that demographic factors such as; income, age, education, sexual orientation, beliefs regarding behavior and salience considered noteworthy predictors of perceived utility of information. Another research conducted by Reifegerste, Blech & Dechant (2020) altered and extended the CMIS framework by adding to it the aspects of Social Network Ties in order to predict proxy information-seeking intentions and the subsequent social-support intentions. The most closely linked study with the current study is the one in which Van Stee and Yang (2018) examined the CMIS in an empirical manner where a nationwide sample of US adults was taken into account. Extension in the model was made by the addition of interest in online exchange of health-related information and cancer concern as study variables, which was pivotal in predicting online cancer information seeking. According to Van Stee and Yang (2018), taking into account the proliferation of the exchange of health information between the patients and the providers (Patel et al., 2015), it is the need of time to incorporate CMIS into this aspect of online health information-seeking behavior.

This research aims to further the viability of the CMIS in Pakistan's environment by considering the social stigma on the ailment of Breast Cancer. Considering the recent expansion in the online exchange of health information amongst the providers and consumers (Patel et al., 2015), It is highly valuable to extend the CMIS to this aspect. Moreover, in the light of previous researches, Researchers assumed that this is more probable that the utility of the information channel serves as a mediator between the association of, i.e. demographics, social stigma, direct experience, salience, beliefs, trust, and information carrier characteristics in health information seeking behavior

Research Design

To examine the information-seeking behavior regarding breast cancer, a survey was conducted amongst 600 women.

Survey

Researchers designed a questionnaire contained 4 segments to measure women's health information-seeking behavior.

Sample

A sample of 600 women from the capital Islamabad was selected through a convenient sampling technique.

Measures

Cancer and Stigma Scale (Marlow and Wardle, 2014), information-seeking behavior (Timmers and Glas, 2010) and CMIS related items (Van Stee & Yang, 2018) were adopted and modified to measure health information-seeking behavior.

Findings and Discussion

The following table shows the frequencies of all the demographic variables.

Table 1. Frequency Table of Demographic Variables

Characteristics	Frequency	Percentage
Income Level		
Low-Middle Income	430	71.7
High Income	170	28.3
Marital Status		
Married	373	62.2
Single	227	37.8
Family Setup		
Joint Family Setup	341	56.8
Nuclear Family Setup	259	43.2
Total	600	100.0

The study participants were 600 women from Pakistan. Among the 600 participants, 71.7% belonged to low-middle income levels, 28.3% were from high-income levels. Out of 600 women who participated in the survey, 62.2% were married, and 37.8% were single. Moreover, out of 600 respondents, 56.8% respondents were from a joint family setup, whereas 43.2% belonged to a Nuclear family setup.

Table 2. Multiple Linear Regression of Factors

Variables	B	Std. Error	β	R^2	F	t	p
UIC	1.203	.111	.404			10.789	.000
Demo	-.232	.281	-.031	.166	59.280	-.824	.000
I.C.C	.601	.070	.242			8.585	.000
Trust	1.498	.064	.655	.538	348.048	23.254	.000
U.I.C	.698	.099	.234			7.038	.000
Salience	1.064	.105	.523	.409	206.71	15.715	.000
U.I.C	1.041	.109	.350			9.587	.000
Beliefs	.685	.091	.276	.238	92.989	7.549	.000
U.I.C	.090	.068	.030			1.325	.186
S.Stig.	.591	.016	.850	.747	80.839	37.055	.000
U.I.C	1.041	.109	.350			9.587	.000
I.C.C	.685	.091	.276	.238	92.989	7.549	.000

*Notes: Each pair of columns reports the results of multiple linear regression analysis with the dependent variable of health information-seeking behavior. *p<0.05; **p<0.01; ***p<0.001; U.I.C: Utility of Information Channel; Demo: Demographics of women; S.Stig.: Social Stigma; ICC: Information Carrier Characteristics; HISB: Health Information Seeking Behavior*

To examine the influence of predictor variables on health information-seeking behavior, multiple regression analysis was done. The R-Square value of .165 revealed that the predictor variables explained a 16 % variance in health information-seeking behavior. As shown in the table, the value of P is also significant. Thus, it can be concluded that the independent variables have considerable capabilities in predicting the utility of information channels in demographics—however, the influence of predictor variables on health information-seeking behavior. The R-Square value of .409 revealed that the predictor variables explained 40 % variance in the Health information-seeking behavior. As shown in the table, the value of p is also significant. Thus, it can be concluded that the independent variables have considerable capabilities in predicting the utility of information channels in salience. Additionally, The R-Square value of .238 revealed that the predictor variables explained 23 % variance in the Health information-seeking behavior. As shown in the table, the value of P is also significant. Thus, it can be concluded that the independent variables have considerable capabilities in predicting the utility of information channels as a mediator in health information-seeking behavior. Furthermore, The R-Square value of .238 revealed that the predictor variables explained 23 % variance in the Health information-seeking behavior. As shown in the table, the value of p is also significant. Thus, it can be concluded that the independent variables have considerable capabilities in predicting the utility of information channels as a mediator in health information-seeking behavior.

Additionally, The R-Square value of .747revealed that the predictor variables explained 74 % variance in the Health information-seeking behavior. As shown in the table, the value of P is also significant (P<0.01). Thus, it can be concluded that the independent variables have considerable capabilities in predicting the utility of information channels in demographics.

The R-Square value of .538 revealed that the predictor variables explained 53% variance in the Health information-seeking behavior. As shown in the table, the value of P is also significant (P<0.01). Thus, it can be concluded that the independent variables have considerable capabilities in predicting the utility of information channels as a mediator in health information-seeking behavior.

As per the CMIS, health condition experience is one of the main factors that predict anyone's Health information seeking (Johnson & Meischke, 1993). Johnson implied that if health-related problems are experienced by people (e.g. they are diagnosed with cancer) and if they come to know the nature of their health problems (for example; perceived poor health status), they will seek to acquire knowledge according to the health condition they are afflicted with (Johnson & Meischke, 1993). Johnson stated that to be able to analyze and measure a person's experience with cancer; there are several factors that can be deemed as important, including the pain, the symptoms of cancer disease, and the family history record of this disease (Johnson, 1997; Johnson et al., 2001; Johnson & Meischke, 1993).

According to a study by Walsh et al. (2010), those cancer survivors who deemed their health condition as perfect were more likely to resort to the internet to acquire information related to cancer, as compared to those who deemed their health as poor. But many other researches (Chou et al., 2011; Xiao et al., 2014) documented a significant relationship between inferior self-rated health conditions and more use of the internet channels for the purpose of seeking health-related information. Contrarily, Xiao et al. (2020) concluded that salience directly influenced the perceived utility.

As per the model, when people come to know that they lack some information regarding salience (for example, health knowledge), they get encouraged to seek information (Case et al., 2005; Johnson, 1997). Taking into account this impression, Johnson used individuals' perceived requirements for the acquisition of knowledge to measure salience (Johnson et al., 1995). This means that people deem any information that they require as salient if they think that their unmet requirements are correlated to the information they want—taking Johnson's idea into consideration, healthy cancer survivors'. And health information needs represent the salience in the present model. Prior studies persistently documented that there was a direct correlation between a higher amount of unmet information needs and OHISB (Lee & Hawkins, 2010; Shaw et al., 2008) and inferior HISE (Mallinger et al., 2005; Roach et al., 2009). Prior researches (Xiao, 2021) concluded that perceived utility had been directly influenced by salience.

Johnson and Meischke (1993) discovered that in predicting the HISB in magazines, health-related factors (which included beliefs) contributed in an unsubstantial manner. Several other investigations came out with the conclusion that beliefs do not contribute enough, or at all, to the utility prediction (Robinson et al., 2006) or the association that they reveal with variables are very inconsistent in the context of the CMIS (e.g., beliefs predict information carrier characteristics, rather than utility; Hartoonian et al., 2014).

The social stigma was added as an antecedent to the CMIS framework, which resulted in the positive prediction of the health information seeking behavior with the utility of the information channel. Individuals who tended to have a greater interest in seeking the exchange of health information online perceived it as having a greater degree of utility, which resulted in them being more likely to indulge in online cancer information seeking. Such outcome backs our idea of extending CMIS so that social stigma in seeking health information online could be included. The outcome of the study shows that utility mediated the association between the social stigma in online health information seeking and health information-seeking behavior. People, when searching about their issues online, can forget about stigmatization, as it's a fairly secret process. People fearlessly share their problems in support communities online. It also attracts the individuals who are reluctant to be in group settings or those who wish to the part of a group in a bid to access the information without going into face-to-face consultation situations (Marton & Choo, 2012). Communication that is done through online means is found to have been playing a huge role in increasing the openness and decreasing the reluctance, just because of the secrecy or anonymity of the information seeker.

Researches of the previous studies used demographic attributes, i.e., age, income, and education (Hartoonian, Ormseth, Hanson, Bantum, & Owen, 2014; Ruppel, 2016). Although the demographics may not be considered for use in the utility, they do have the capability to bolster the

HIS; however, as opposed to the outcomes (Reifegerste et al., 2020) that education is discovered to be in a positive association with health information seeking.

According to DeLorme, Huh, & Reid (2011), there are some negative relationships that have also been documented (Van Stee & Yang, 2018). Some outcomes of conflicting nature, pertaining to demographics for surrogate seeking, have also been noticed. According to some researches, age was in a significant relation with surrogate seeking, in contrast to gender and education (Cutrona et al., 2015; Sadasivam et al., 2013). On the contrary, Robinson et al. (2006) stated that the education level of the cancer-surviving individuals acted as a significant negative OCIS predictor. The outcome of the aforementioned research is akin to that of the study, keeping in mind the negative relationship with education, but the difference is that the current study compares the association between education and utility, whereas research of Robinson et al. (2006) compared the relationship between education and OCIS (Van Stee & Yang, 2018).

CMIS defines direct exposure as the extent to which a patient experiences the disease in person or experiences it while being in a personal network (DeLorme et al., 2011). Lin and Dutta (2017) discovered that in India, there was a substantial correlation between the internet when used as a source of seeking information related to general matters and other sources that included friends, newspapers, families, and health professionals. This coincides with the study which says that individuals opt to pick their choice from the different sources of health information, and their choice depends on how they see media and how they think their needs will be fulfilled (Basnyat et al., 2018; Lee & Lin, 2016; Lin & Dutta, 2017).

Within the repertoire of medical procedures, beliefs have been idealized as someones efficacy beliefs in the medicinal-related procedures (Johnson & Meischke, 1993). Motivation for OHIS is anticipated to increase with two of the factors that possess personal relevance; one is salience, and the other is belief (Basnyat et al., 2018). There are various researchers whose researches have alluded to the positive relations between beliefs and the utility of OHIS (Basnyat et al., 2018; Van Stee & Yang, 2018), whereas Oh (2015) was unable to point out any positive correlation between healthcare-related self-efficiency and either surrogate OHIS or self. Yet those individuals who see themselves as being capable of seeking out healthcare information (For example, those individuals who have higher self-efficacy) are much more expected to indulge themselves in OHIS (Cao, Zhang, Xu, & Wang, 2016).

The application of beliefs in the current research could have been one of the reasons as to why the results of this study and of the previous studies have discrepancies, e.g., Beliefs have been applied as advantages and disadvantages in the detection of breast cancer (Johnson & Meischke, 1993), and also in the context of the cognitive stress (Robinson et al., 2006).

It was suggested by the hypothesis that utility will play the role of a mediator for effects that information carrier characteristics will wield on OCISB. The outcome demonstrated that utility mediated the association between OCIS and information carrier characteristics. To be more precise, utility acts as a partial mediator here.

According to the CMIS model, a greater perceived trust in the source of information enables a higher amount of health information seeking. Johnson (Johnson 1997) says that if people perceive one information source (for example, Cancer-pertaining websites) as more credible than the other (e.g. Print Media or Magazines), they will resort to the more credible one more often.

In earlier researches on the use of the internet as a way to acquire health information, a staunch association was noticed between OHISB and health information seeking behavior; meaning that greater trust in health information on the internet resulted in greater HISB (Miller & Bell, 2012; Rains, 2007; Xiao et al., 2014; Zulman et al., 2011).

Conclusion

Women in Pakistan outnumber men when it comes to the population of Pakistan, and BC is the most prevalent type of cancer in the country (Rasool et al., 2019). Women lack awareness regarding the BC screening importance as well as procedure. Self-assessment of the breasts is the most frugal way of screening, and if women are taught the proper way to do it, it could be done at home on a monthly basis without the intervention of a health expert. If this happens, the prognosis could drastically be improved, and the disease could be caught at much earlier stages and, therefore, effectively be treated (Ahmed et al., 2018). It is inexpensive, simple and does not require any specialized equipment or regular visits to the hospital, thus proving its usefulness in underdeveloped countries too, which lack resources.

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