

Original Article

Internet Usage at Pregnant Women affect the Decision-Making?

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Abstract

Aim: The aim of this study to determine of internet use by pregnant women and its effect on their decision-making.

Material and Method: This study descriptive and cross-sectional was conducted. The study was conducted in the Turkey and consisted of 505 pregnant women in the 28th week of gestation and over.

Results: It was determined that 53.1% of the pregnant women used the internet; 80.6% of them stated that they thought that the information obtained from the internet was exact. The pregnant women using the internet had an education period 1.2 times greater, had an income level 1 time greater, and displayed 0.8 times more procrastination compared to those who did not use the internet.

Conclusions: It was observed that pregnant women needed to apply to another healthcare professional because of the inconsistent information obtained from the internet, and they procrastinated decision-making more than women who do not use the internet.

Keywords: Pregnancy, internet use, women's health, e-health, decision-making

Introduction

In recent years, the internet has become one of the most popular and easiest sources of information on health issues (Gao, Larsson & Luo, 2013; Sayakhot & Carolan-Olah, 2016; Oh, J., & Kim, J. A, 2017; Chen, Y. Y., Li, C. M., Liang, J. C., & Tsai, C. C, 2018). Women commonly prefer seeking information on internet, especially during their pregnancy process. This is because, throughout a woman's life, it is during the pregnancy period that the need for gaining information is maximum (Javanmardi, M., Noroozi, M., Mostafavi, F., & Ashrafi-Rizi, H, 2018; Sanders, R. A., & Crozier, K, 2018). Because pregnancy is a common health condition, and expectant families have unanswered questions (Robinson, J. R., Anders, S. H., Novak, L. L., Simpson, C. L., Holroyd, L. E., Bennett, K. A., & Jackson, G. P. (2018). Numerous studies conducted in various regions of the world have revealed the increasing use of the internet by many pregnant women in

searching for information (Gao, Larsson & Luo, 2013; Lima-Pereira, Bermúdez-Tamayo & Jasienska, 2012; Kavlak, Atan, Gulec, Ozturk &

Atay, 2012). A study conducted in Sweden indicated that 84% of the pregnant women studied used the internet to obtain information on pregnancy (Larsson, 2009). A survey conducted by the Turkish Statistical Institute (2017) revealed that the rate of internet use by women was 58.7%.

Most pregnant women consider the internet as a highly reliable source of information (Bert et al., 2013; Gao, Larsson & Luo, 2013; Kavlak, Atan, Gulec, Ozturk & Atay, 2012). The most searched topics on the internet are fetal development, nutrition during pregnancy, birth complications, and breastfeeding (Lima-Pereira, Bermúdez-Tamayo & Jasienska, 2012; Scaioli et al., 2015). Pregnant women also use the internet to seek information regarding pregnancy and childbirth in particular, as these are often worrying times for women (Lagan, Sinclair & Kernohan, 2010).

Pregnant women may use the internet both to meet the information need and to contribute to their decision-making process (Sanders, R. A., & Crozier, K, 2018). They may use the internet to strengthen their decision about pregnancy or to check the accuracy of current knowledge (Lagan, Sinclair & Kernohan, 2010).

Although the internet allows quick access to information, it also gives rise to some questions such as “Which information is correct?” and “Which decision is better for health?”. During the pregnancy period, several important decisions are made related to the woman and fetus. The correlation between the internet use and the decision-making level in this period is important for both their health. An understanding of how pregnant women use the internet as an information tool is important to guide the work of health professionals (Lagan, Sinclair & Kernohan, 2010). For this reason, this study aims to determine the effect of internet use by pregnant women on the situation on decision-making related to pregnancy and child birth. The questions addressed were: whether, and how often, pregnant women in Turkey searched the internet; what kind of information they looked for; how they perceived the reliability of the information and whether or not this was reflected in interactions with their health professionals? What is the effect of internet usage on decision-making related to pregnancy and child birth?

Material and Method: This descriptive and cross-sectional study was conducted in the pregnancy outpatient clinics of the State Hospital in a city located in the eastern Turkey between August 22 and December 30, 2016. The population of the study included pregnant women who applied to the pregnancy outpatient clinics of the mentioned hospital. The minimum sample size of the study was 505, and the participants were selected using the improbable random sampling method. The estimated rate of internet use was 0.58, deviation was 7%, type I error (α) was 0.05, and type II error (β) was 0.10 according to the power analysis performed. The inclusion criteria for the participants were as follows: pregnant women whose gestation period was 28 weeks or above, having no communication problem, and who are literate. The data were collected on four weekdays every week. The data collection forms were filled in by the researcher herself during the face-to-face interviews conducted with those volunteering to participate in the study. Data

were collected using the personal information form and the Melbourne decision-making questionnaire I-II. During the data collection, the participants needed to be provided a comfortable environment and they must not experience any anxiety related to the examination; this was ensured by collecting the data in the pregnancy training room of the hospital after the examination in the outpatient clinic. There are totally five pregnancy outpatient clinics in the state hospital and an average of 30 pregnancy examinations per day are performed in each outpatient clinic. On an average, the examination for each pregnant woman takes 5–10 minutes.

Personal Information Form: There are a total of 31 questions related to the socio-demographic characteristics, obstetric data, and internet use of the pregnant women (Plantin & Daneback, 2009; Romano, 2007; Sayakhot & Carolan-Olah, 2016).

Melbourne Decision Making Questionnaire I-II: The Melbourne Decision Making Questionnaire was developed by Mann et al., 1997 and its validity and reliability study was conducted by Deniz by adopting the scale into Turkish (Deniz, 2004). The questionnaire consists of two parts and a total of 28 questions. Part I: It is aimed to determine the level of self-esteem of the pregnant women in decision-making. It consists of six items. The lowest score is “0” point, and the highest score is “12” points. High scores signify high self-esteem in decision making. Part II: It is aimed to determine the decision-making style of the decision-maker. It has four subscales. The vigilance decision-making style is the situation in which the individual seeks for the required information carefully before making a decision and makes a choice after reviewing the alternatives carefully. The buck-passing decision-making style is the situation in which the individual avoids making decisions, tends to let others make decisions for him/her, and tries to get rid of making decisions by transferring the responsibility to others. The procrastination decision-making style is the situation in which the individual constantly procrastinates the decision without having a considerable reason. The hypervigilance decision-making style is the situation in which the individual tries to reach a solution quickly by displaying a hasty behavior as he/she feels himself/herself being under time pressure. High scores indicate that the relevant decision-making style is used (Deniz, 2004).

The Statistical Package for the Social Sciences for Windows 16.0 (SPSS for Windows) software was used for the statistical analysis of the data. For the statistical analysis of the data, the t-test, chi-square test, one-way analysis of variance, and logistic regression analysis as well as the descriptive statistical methods (number, percentage, mean, and standard deviation) were used.

Ethics Committee Approval: The principles of Declaration of Helsinki were followed in the implementation of the study. A written informed consent was obtained from each participant. Moreover, the study written approval was received from the Non interventional Clinical Studies Ethics Board (Decision No: 2016/13-1) and the institutional permission from the hospital where the study was carried out.

Results

Of the participants, 53.1% used internet. It was determined that 52.6% of the participants used two and more websites and they mostly took into consideration reliability (84%) when choosing the websites. While 80.6% of them stated that they considered the information they obtained from the internet as correct, 10.1% stated that they made changes in their treatment according to the information they obtained from the internet, 64.9% stated that the information obtained from a

healthcare professional and that from the internet were not consistent with each other, and 95.9% of them stated that they applied to another health professional when the information obtained by a healthcare professional and from the internet were not consistent with each other. Furthermore, 41.8% of the participants who used internet stated that they did not confirm the information obtained from the internet with a healthcare professional (Table 1). In the study, the most searched topics by the participants were fetal development (76.5%), related to the pregnancy process; the mode of delivery (51.9%), related to the birth process; and infant care (72.8%), related to the postpartum process (Table 2). A significant correlation was determined between the internet use by the participants and their age, educational status, monthly income, the number of pregnancies, and the subscales of the administered decision-making questionnaire, namely, self-esteem, buck passing, procrastination, and hypervigilance ($p < 0.05$). Table 3 shows the logistic regression analysis result, formed with the significant variables. The analysis result indicates that the pregnant women who used the internet had 1.2 times greater education years and 1-time higher income status; moreover, they displayed 0.8 times more procrastination than the pregnant woman not using the internet ($p < 0.05$) (Table 3).

Table I. The distribution of the internet use related characteristics of the pregnant women.

The internet use-related characteristics	n	%
<i>Internet use</i>		
Yes	268	53.1
No	237	46.9
<i>The number of websites followed</i>		
1	127	47.4
2 ≥	141	52.6
<i>Things to consider when choosing an internet address</i>		
Being reliable	225	84.0
The number of followers and comments	43	16.0
<i>The situation of believing that information from the Internet is correct</i>		
Yes	216	80.6

No	52	19.4
<i>The consistency of the information obtained from the healthcare professionals and from the internet</i>		
Yes	94	35.1
No	174	64.9
<i>The type of the change made when the information obtained from the healthcare professionals and from the internet were not consistent</i>		
I rely on the internet, I don't use the treatment.	5	1.9
I apply to another health professional	257	95.9
I go on searching from another internet address	6	2.2
<i>Having a healthcare professional to confirm the information obtained from the internet</i>		
Yes	156	58.2
No	112	41.8

Table 2. The distribution of the topics searched by pregnant women mostly on the internet.

The searched topics ^a	n	%
Pregnancy		
Fetal development	205	76.5
Nutrition during pregnancy	125	46.6
Pregnancy complications	127	47.4
Antenatal care	69	25.7
Matters to be attended to	80	29.9
Exercises during pregnancy	81	30.2
Childbirth		
Mode of delivery	139	51.9
Stages of childbirth	99	36.9
Hastane ve doktor seçimi	126	47.0
Onset of labour	120	44.8
Stories about giving birth	63	23.5
Postpartum period		
İnfant care	195	72.8

Infant feeding	186	69.4
Maternal recovery	101	37.7
Nutrition during postpartum period	87	32.5

^aMore than one item could be indicated. The percentages were taken based on “n”.

Table 3. The analysis of some variables on the internet use by the pregnant women*

Variables	B	SE ^a	df ^b	p	OR ^c	%95 CI ^d	
						Min. Value	Max. Value
Age (year)	-0.005	0.024	1	0.835	0.995	0.949	1.043
Education status	0.187	0.027	1	0.000	1.206	1.143	1.273
Monthly income	0.000	0.000	1	0.001	1.000	1.000	1.001
Number of pregnancies	-0.271	0.103	1	0.009	0.763	0.623	0.933
Self-Esteem	0.066	0.057	1	0.247	1.068	0.955	1.194
Buck-passing	-0.032	0.056	1	0.570	0.969	0.868	1.081
Procrastination	-0.144	0.058	1	0.013	0.866	0.772	0.970
Hypervigilance	-0.053	0.065	1	0.415	0.948	0.835	1.077

* Logistic regression; SE^a: Standard error; df^b: Degrees of freedom; OR^c: Odds ratio; CI^d: Confidence interval

Discussion

Nowadays, the role of the internet in meeting the need for medical information is considerably great. The internet use has become very popular not only among the general population but also among pregnant women (Sayakhot & Carolan-Olah, 2016). In the present study, more than half of the pregnant women stated that they used internet. Bjelke et al. on in Sweden and Gao et al. in Chinese respectively, found that 95% and 91.9 % of the pregnant women they studied used internet to obtain relevant information ((Bjelke, Martinsson, Lendahls & Marie Oscarsso, 2016; Gao, Larsson & Luo, 2013). Kavlak et al. determined that in Turkey, 45.4% of the pregnant women used the internet (Kavlak, Atan, Gulec, Ozturk & Atay, 2012). While the results of the present study is similar to the results of the study conducted in Turkey, it is different from those of Bjelke et al. and Gao et al. (Bjelke, Martinsson, Lendahls & Marie Oscarsso, 2016; Gao, Larsson & Luo, 2013). The difference between the internet use rates of the countries is considered to

be associated with the level of per capita income, and thus the opportunity of accessing the internet.

The internet use varies depending on some socio-demographic characteristics. It has been stated in the literature that women with better socio-demographic characteristics utilize the internet more in fulfilling their information need compared with others (Lagan, Sinclair & Kernohan, 2010; Plantin & Daneback, 2009; Song, West, Lundy & Smith-Dahmen, 2012). Sayakhot et al. determined that, in their study, women who used the internet had an education period 3 times greater than those who did not use the internet (Sayakhot & Carolan-Olah, 2016). The study conducted by Kavlak et al. in Turkey confirmed that pregnant women who were young and had high-level education used the internet more; the women who used the internet had an education period 1.2 times greater and an income 1.0 times greater compared to those who did not use the internet. In addition, women of less age showed increased rate of internet use (Kavlak, Atan, Gulec, Ozturk & Atay, 2012). The results

of the present study are parallel with the literature (Lagan, Sinclair & Kernohan, 2010; Plantin & Daneback, 2009; Song, West, Lundy & Smith-Dahmen, 2012).

In this study, it was found that with the increase in the number of pregnancies, the internet use decreased. Bert et al. reported that primiparous pregnant women they studied showed a higher rate of internet use compared to multiparous women (Bert et al., 2013). Lagan et al. determined that the most internet use was observed in primiparous women (Lagan, Sinclair & Kernohan, 2010). The result of the present study is parallel with those of Bert et al. and Lagan et al. (Bert et al., 2013; Lagan, Sinclair & Kernohan, 2010). This observation can be attributed to the fact that with increasing experience due to the increase in the parity number, the concerned topics searched on the internet decreases; in addition, decrease in the educational level due to the increase in the parity number may affect the decrease in internet use.

In the study, a negative correlation was determined between internet use and buck-passing, procrastination, and hypervigilance decision-making styles. The logistic regression analysis results revealed that the pregnant women who used the internet displayed procrastination 0.8 times more than those who did not. This is consistent with Phillips and Reddie's study, who also found that the people who use the internet procrastinate more while making decisions (Phillips & Reddie, 2007). Lagan et al. also showed similar results, indicating that internet use played an important role in the decision-making process of pregnant woman (Lagan, Sinclair & Kernohan, 2010). It was thought that pregnant women procrastinated decision-making more because the information obtained from the internet was not consistent with the healthcare service received, which made them skeptical about the information and ultimately led them to search for further information. Indeed, in this study, more than half of the participants stated that the information they obtained from the internet was not consistent with the information provided by the healthcare professional; almost all of them stated that they applied to another healthcare professional and a few stated that they continued searching in another website.

In this study, four in five of the pregnant women stated that they considered the information they obtained from the internet as correct and paid

attention to reliability in choosing a website, which is consistent with the literature (Gao, Larsson & Luo, 2013; Bert et al., 2013, Huberty, Dinkel, Beets & Coleman, 2013).

It is required that patients convey their health-related concerns and complaints to healthcare professionals clearly and, likewise, healthcare professionals clearly and comprehensibly communicate health-related knowledge to the patients (Wilson, 2004). In the study, almost half of the participants stated that they did not confirm the information obtained from the internet with healthcare professionals. Lagan et al. determined that at least 70.8% of the pregnant women they studied discussed the information obtained from the internet with a healthcare professional (Lagan, Sinclair & Kernohan, 2011). Kavlak et al. found that 51.2% of the pregnant women they studied shared the information they obtained from the internet with a healthcare professional (Kavlak, Atan, Gulec, Ozturk & Atay, 2012). The present result is parallel with that of Kavlak et al. but not Lagan et al. (Kavlak, Atan, Gulec, Ozturk & Atay, 2012; Lagan, Sinclair & Kernohan, 2011). This difference was thought to be associated with the fact that the studies were conducted in different countries, so the health service received and communication with the healthcare professionals in these countries differed from those in Turkey. In the studies conducted in Turkey, it has been stated that the most important reason for why the communication with the healthcare professionals is limited is that the examination time allocated for individuals is short (Cankaya et al., 2014; Aksakal & Bilgili, 2008). Insufficient communication due to this time limitation is considered to lead to pregnant women not sharing the information they obtained from the internet with healthcare professionals.

In the present study, "fetal development" was the most searched topic on the internet by the participants. This agrees with the results of Bjelke et al. and Larsson (Bjelke, Martinsson, Lendahls & Marie Oscarsso, 2016; Larsson, 2009). The present study is also consistent with that of Hildingsson et al. which also found that information on fetal development related to early pregnancy process was searched intensively by women in the prenatal period (Hildingsson, Waldenstrom & Radestad, 2002).

Limitation: The limitation of the study is that it was conducted in a hospital-based and only

women in the third trimester of pregnancy were included. Comprehensive and population-based studies with larger groups are required and other trimesters of pregnancy need to be included.

Conclusions: This study determined that internet use by pregnant women is common but the information obtained is insufficient in terms of being consistent with healthcare professionals. In addition, it was determined that pregnant women often consulted other health professionals because of the inconsistent information obtained from the internet, and in relation to this, they procrastinate decision-making more. On the basis of the results, it is recommended that healthcare professionals prepare an environment conducive to open discussion with pregnant women regarding the information obtained from the internet and suitable guidance be provided to them in case of contradictions.

Study Limitations: The limitation of the study is that it was conducted in a hospital-based and only women in the third trimester of pregnancy were included. Comprehensive and population-based studies with larger groups are required and other trimesters of pregnancy need to be included.

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