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Online Health Information Seeking Behavior among Iranian Pregnant Women: A Case Study

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Abstract

Objective: The present study aimed to investigate the health information seeking behavior, applicability and the evaluation of health information obtained from the Internet by Iranian pregnant women.

Design and setting: The present study was descriptive-survey. The study population included 196 pregnant women in different gestational months referred to hospitals with Obstetrics and Gynecology ward in Hamadan, Iran on September and October in 2016 who were selected based on stratified random sampling method. The data were collected through a researcher-made questionnaire.

Findings: Most pregnant women, while facing with pregnancy problems, seek out health information from the Internet and they often trust the information and share with their doctor. The information increases their awareness about pregnancy. Websites and social networks are two important sources in finding health information and reference of content and educated authors are regarded as two important criteria in evaluating health information obtained from the Internet. In addition, fetal development and nutrition during pregnancy were regarded as two important issues having the most searches among pregnant women.

Conclusion: Internet has become a popular source for health information finding. The high importance of the accuracy of information used by pregnant women and the vulnerability of this range of society highlight the need to equip hospital libraries with update resources of the information and amenities such as suitable seats, ventilation, and the like. Using medical librarians and informants and referral of pregnant women to these libraries by a doctor or midwife in order to obtain valid information, standardization of Persian-based digital libraries related to health, introducing valid portals for pregnant women are regarded as some important issues in this regard. Familiarizing pregnant women, especially in developing countries, with various types of content on the Internet and how to find valid information by medical librarians can facilitate the access to information for pregnant women and reduce many complications raised by the lack of reliable and valid information.

Keywords: Information Seeking Behavior, Internet, Pregnant Women.

Introduction

Todays, pregnant women require a significant amount of information about pregnancy, birth and childcare with regard to their responsibilities and special mental and physical conditions. They can acquire information from diverse sources such as the Internet, family, friends, written materials from professional and commercial institutions, public media such as newspapers, TVs, childbirth training classes, and the discussions with health professionals(Grimes et al., 2014). Getting medical and health information about pregnancy improves individuals' knowledge, reduces uncertainty and stress in dealing with medical problems, and increases their interaction with the doctor. On the other hand, gaining health information during pregnancy can lead to self-care, awareness raising and the best results of pregnancy (Shieh et al., 2009).

Nowadays, the Internet is a very important platform in the retrieval and exchange of information(Dubowicz and Schulz, 2015). The most prominent feature of the information site is the availability of update and free information at the shortest time possible (Ybarra and Suman, 2008) which provides easy access to health information for people and has become one of the most popular sources of health information in recent years(Yan, 2010) in such a way that more than 3 billion people in the world are currently Internet users, among which Asia has the highest Internet users with 50.2% ("Internet World Stats Usage and Population Statistics," 2017). Accordingly, the health information seeking behavior should be considered in the Internet in today's world. Online health information seeking behavior represents how to search, find, evaluate, and apply health information obtained from the Web (Zuckerman, 2009). However, there is a problem of assessing the validity of health information sources in the web sites by users(Fox, 2006) so that many users do not share their health information obtained from the web sites with health professionals and try to self-mediate using their retrieved information(Fox, 2006; Ogan et al., 2008)Actually, health information users should be aware that the quality and reliability of online health information are always challenging (Bernstam et al., 2005; Cline and Haynes, 2001; Eysenbach et al., 1998). and the recognition of this quality by health information users is important (Coulter et al., 2006). Since the Internet has become a popular source of health information due to its capabilities and pregnant women need

quick and easy access to update resources in solving their health problems due to their sensitive position and responsibility, the false information on the Internet and the lack of successful search lead to the confusion of pregnant women and the aggravation of their anxiety and concern (Gao et al., 2013). Obviously, prevention has always been better and more affordable than cure. This principle is also true about pregnant women because preventing the birth of a premature, mentally or physically retarded child, or any other problem, is much less costly than postpartum treatment. Thus, the health of a spectrum of potential members of the community is considered in this vulnerable group of information society, pregnant mothers. However, the availability of inaccurate information in this category creates a defective and costly cycle for the economy of the countries which continues for many years after the child's birth. Every day about 830 women die due to the preventable causes in pregnancy and childbirth. The main causes of death are related to bloodshed, insecure abortion, high blood pressure, infections and indirect causes that mainly occur due to the lack of proper information and interaction with the doctor before pregnancy and during pregnancy. The risk of a pregnant woman's death due to the pregnancy complications in developing countries is 33 times higher than that of the developed countries (“ World Health Organization(WHO)”, 2017). Therefore, the importance of investigating the health information seeking behavior in pregnant women was welcomed by many researchers and managers in all countries. However, it has been less emphasized in developing countries such as Iran. Statistics show that 99% of maternal death occurs in developing countries (“ World Health Organization(WHO),” 2017). Therefore, more attention should be paid to the health of pregnant mothers in these countries and health systems should provide high-quality information to meet the needs and priorities of women. Therefore, the present study aimed to investigate the health information seeking behavior, applicability and the evaluation of health information obtained from the Internet by Iranian pregnant women.

Method

The study population included 196 pregnant women in different gestational months referred to hospitals with maternity ward in Hamadan during September and October 2016 who were selected based on stratified random sampling method. Hamadan is one

of the metropolises in the western part of Iran as well as the capital of Hamadan province.

The sample size was calculated using the following formula:

$$n=\frac{(z_{1-\alpha/2})^2 \times P(1-P)}{(d)^2}$$

In the present study, data were collected by a researcher-made questionnaire which was provided through a depth review of the relevant texts and studies (Marton, 2010; Turgut, 2010; Yoo, 2004; Zuckerman, 2009). The validity of the questionnaire was confirmed using the comments and suggestions of the experts and its reliability was assessed by distributing the questionnaires among a small group of users (15 pregnant women) and Cronbach's alpha coefficient was calculated after data collection. The obtained Cronbach's alpha coefficient (85%) indicated that the questionnaire had an appropriate reliability.

In order to distribute the questionnaires, first, an introduction letter from Deputy of Education of University was presented to hospitals with obstetrics and gynecology ward in Hamadan city to obtain the approval of these hospitals. Then, pregnant women were satisfied with participating in the study and the goals of the study were explained and the questionnaires were distributed based on the pregnancy quarter and were collected after 15-20 minutes. All data were collected during 2 months in 2016.

The questionnaire consisted of six parts including demographic information such as age, education, language, location, English language proficiency and library reference rate, the level of familiarity and use of the Internet, health status and health information seeking behavior in the Internet, information resources used in the web sites, identifying the topics which are most searched and the last part of the questionnaire referred to one open-ended question which asked the respondents to express their suggestions for better access to the health information in the Internet. In order to investigate the results of the questionnaire, the items of questions were first coded. Then, the data were entered into SPSS version 16 and the descriptive statistics including frequency and percentage, mean and standard deviation, tables and diagrams were used to achieve descriptive goals.

Findings

The age of the subjects ranged between 19-43 years old with an average age of 28 (SD= 4.2) and a range of 24. Table 1 illustrates the demographic characteristics of the subjects. The study of the characteristics of the pregnant women shows that the most health information seekers had good health status, with a middle age of 28 and with high education, and more than half of them are familiar with English. People who visit the library less often go to the Internet for health information finding.

Table 1. Socio-demographic characteristics of respondents (n=196)

Characteristics	N	%
Age		
Less than 30	121	61.7
More than 30	75	38.3
Level of education		
Less than High School	9	4.6
High School Degree	73	37.2
Bachelor	80	40.8
MA and higher	34	17.3
English language proficiency		
Never	9	4.6
Low	68	34.7
Average	109	55.6
High	10	5.1
The amount of referral to library		
Never	49	25
Low	105	55.1
Average	36	18.4
High	3	1.5
Health status		
Very bad	4	2
Bad	28	14.3
Average	0	0
Good	129	65.8
Very good	35	17.9
Address		
Village	10	5.1
the country	4	2
City	25	12.8
Province	157	80.1

Most of the pregnant women participating in the study were online from home (89.8%), work place (7.1%), and public places (1.3%), for 1-2 hours per day and at least 1-2 times a week, using a search engine (75%) to obtain health information. The subject matter of the site was reported with 56.1% of the important criteria for selecting sites and health links, and the next was curiosity with 25% and the reputation

of a website with 18.9%. Most pregnant women used personal experience (53.6%) to familiarize with the Internet to seek out health information, and the next options were friends and acquaintances (36.2%), and Internet training classes (11.7%), reading books and related articles (10.7%), library and library specialists (2.6%), and finally, employees of the cafe net (0.5%).

61.2% of pregnant women sought health information only when they had problems with their pregnancy, and 43.4% trusted the health information obtained from the Internet and 40.8% stated that they had sufficient skill to recognize the validity of the health information obtained from the Internet. However, 57.7% sought the same information in other sources of information such as books, magazines, and the like after obtaining health information from the Internet and 74.5% compared the same information with other websites after obtaining health information from the website.

Among the sources of health information, websites (93.9%) and social networks (84.7%) were the most widely-used resources. Pregnant women shared 80.1% of information obtained from the web site with midwife or doctor and 75.5% talked with colleagues or family or friends about the information. The information increased the knowledge of 74% of the pregnant women about the symptoms and conditions of pregnancy. 65.8% of pregnant women did not perform self-medication through the information they received.

Table 2. Frequency statistics of health information evaluation criteria obtained from Internet by pregnant women

	N	**%**
Referral content	148	75.5
Educated authors	108	55.1
Educational aspect of the content	106	54.1
Confidentiality	96	49
Availability of the authors	39	19.9
Advertising policy	35	17.9
Observance of balance and fairness in providing medical materials	32	16.3
Website sponsors	8	4.1

Table 2 represents the criteria considered more by pregnant women in evaluating health information obtained from the web sites. Reference of content (75.5%), educated authors (55.1%), educational aspects of content (54.1%), and confidentiality (49%) were more emphasized and items such as website sponsors (4.1%), the

observance of balance and fairness (16.3%) and advertising policy (17.9%) were less considered.

Table 3. Frequency of topics searched from the Internet by pregnant women

Subjects	**At all** n (%)	**Low** n (%)	**Average** n (%)	High n (%)
Fetal development	13(6.6)	18(9.2)	51(26)	114(58.2)
Nutrition during pregnancy	17(8.7)	24(12.2)	68(34.7)	87(44.4)
Delivery and birth	18(9.2)	37(18.9)	57(29.1)	84(42.9)
Ultrasound and screening tests	26(13.3)	31(15.8)	59(30.1)	80(40.8)
Selecting a name	26(13.3)	38(19.4)	54(27.6)	78(39.8)
Complications of pregnancy	30(15.3)	40(20.4)	58(29.6)	68(34.7)
Signs of pregnancy	22(11.2)	47(24)	61(31.1)	66(33.7)
Vitamins / food supplements	31(15.8)	49(25)	58(29.6)	58(29.6)
Fetal problems and diseases	43(21.9)	39(19.9)	57(29.1)	57(29.1)
Exercise during pregnancy	42(21.4)	54(27.6)	48(24.5)	52(26.5)
Sex	41(20.9)	56(28.6)	57(29.1)	42(21.4)
Prescription Drugs	60(30.6)	50(25.5)	53(27)	33(16.8)
Sleep and rest	52(26.5)	55(28.1)	56(28.6)	33(16.8)
Gestational Diabetes	70(35.7)	50(25.5)	44(22.4)	32(16.3)
Mental health (such as depression, anxiety, and stress)	56(28.6)	66(33.7)	46(23.5)	28(14.3)
Thyroid diseases	80(40.8)	57(29.1)	31(15.8)	28(14.3)
Doctor / Special hospital	91(46.4)	47(24)	31(15.8)	27(13.8)
Gastrointestinal disorders	69(35.2)	54(27.6)	46(23.5)	27(13.8)
Disorders of the urinary tract	74(37.8)	55(28.1)	44(22.4)	23(11.7)
Shortness of breath	73(37.2)	64(32.7)	36(18.4)	23(11.7)
Hypertension disorders	82(41.8)	61(31.1)	32(16.3)	21(10.7)
Heart beat	83(42.3)	54(27.6)	39(19.9)	20(10.2)
Bone diseases	116(52.2)	43(21.9)	28(14.3)	9(4.6)
Health insurance	130(66.3)	35(17.9)	22(11.2)	9(4.6)

Based on the findings in Table 3, pregnant women sought issues such as fetal development (58.2%), nutrition during pregnancy (44.4%), delivery and birth (42.9%), ultrasonography and screening tests (40.8%) and selecting a name (39.8%) more.

Table 4. Frequency of pregnant women in searching health information from the Internet

Variable	**%**	Frequency
Pregnant women without any problem	45.4	89
Lack of familiarity with search practices	6.1	12
Lack of familiarity with specialized resources and sites	13.3	26
Lack of full familiarity with English	3.6	7
Lack of familiarity with the Internet	15.3	30
Unstable address of sites, pages and electronic documents	3.1	6
Invalidity of information on the Internet	13.3	26
Total	100	196

As shown in Table 4, 45.4% of the participants in the study stated that they had no problem in finding the required health information from the web sites. However, the most important problems that respondents cannot find the required information include the lack of familiarity with the Internet (15.3%), lack of credibility of information on the Internet (13.3%), lack of familiarity with specialized resources and sites (13.3%), lack of familiarity with search methods (6.1%), lack of full familiarity with English (6 / 3%) and instability of the addresses of sites, pages and electronic documents (3.1%).

Discussion and conclusion

The ease of access to the Internet and its low costs compared to other information resources lead to the public use of the Internet as a common source of health information among information seekers as the Internet is regarded as the first step in the study of information about a disease and its treatment(Berland et al., 2001; Yan, 2010). Todays, the number of content producers on the Web has dramatically increased. Hence, the control and validation of the accuracy of information on the web are not always possible. Therefore, the quality of retrieved information is always in doubt (McBride et al., 2017), which creates various problems for pregnant women as a vulnerable group who need accurate medical information.

On the other hand, most pregnant women participating in the study seek information not before that while encountering problems during pregnancy. However, accessing correct information and effective communication with the doctor before facing with the problem can prevent many irreparable risks. For example, many women worldwide die due to the complications of pregnancy and delivery (Say et al., 2014), while most of these deaths can be prevented by accurate and timely information. In fact, lack of information is one of the factors preventing proper care receiving during pregnancy and childbirth(“ World Health Organization(WHO),” 2017). Availability of reliable information through doctor, midwife, librarian, relatives or using printed or non-printed information resources, especially online resources that are very popular todays are very important and valuable for this group of community.

The results of the present study showed that basic knowledge in the field of Internet is moderate and the highest use of the Internet is at home (89.8%). More than half of the

respondents (53.6%) are familiar with the Internet with their own personal experience and seek health information. A search with personal experience is accompanied by trial and error and unfamiliarity with the search methods can lead to the incorrect information. Holding training workshops to familiarize pregnant women with how to find health information on the internet by medical librarian can be regarded as a method to overcome this problem.

Finding true, reliable and update health information is very important for pregnant women. The results of this study demonstrated that increasing the knowledge of pregnant women about pregnancy enhances their self-confidence and improves their relationship with their physician and ultimately, reduces their fear and concern. Given the high volume of information available on the Internet in the field of pregnancy, pregnant women need a lot of time to obtain and evaluate the information. Therefore, equipping hospital libraries with update information resources and appropriate amenities such as proper seats, ventilation, and the like skillful medical librarians and informants and the referral of pregnant women to these libraries by physicians or midwives to obtain credible information, and the standardization of Persian-based digital libraries related to health, highlight introducing the credible and reliable portals for pregnant women. Familiarizing this group of community with all kinds of content on the internet, how to obtain credible information and creating specialized health libraries can make it easier for pregnant women to access information and reduce the many complications caused by the lack of credible and inaccurate information which can be regarded as a good solution to the related problem.

the results of the present study indicated that most pregnant women trust the information obtained from the Internet, which are consistent with the study results of Gao et al. (2013), Turgut (2010), Lagan et al. (2010), and Santis et al. (2010), Most pregnant women share the information obtained from the web sites with their physician, which is consistent with the study results of Aref-Adib et al.(2016), although it contradicts with the results of Larsson (2009), Gao et al. (2013), and Turgut (2010) who reported that a small percentage of internet users consults with their doctor about the health information retrieved. Accordingly, establishing a mobile

midwifery plan and holding maternity training classes in Hamadan city increase the interactions and comfort of pregnant women with their midwife.

The present study indicated that obtaining health information by using the Internet increases the women's information about pregnancy and 71.4% stated that the related information is effective in their decision-making, which is consistent with the study results of Lagan et al. (2010). It is worth noting that the influence of the obtained information in making decisions without consulting a physician can create irreparable risks for the mother and the fetus.

In addition, the results of the present study illustrated that younger pregnant women with high education and familiarity with English and those who go to libraries less often use the Internet to find health information. Lalazaryan et al. (2015), Okhovati et al. (2016) and Lee et al.(2014) concluded that younger and more educated people use the Internet more for finding health information. Grimes et al. (2014) also found that people who are familiar with English are more likely to seek online health information.

Based on the findings, most respondents begin their search from search engines which are consistent with the findings of Lagan et al. (2010) and Turgut(2010). These kinds of searches, regardless of the validity of the retrieved site, or the neglect of the expertise of the individual who publishes information on a site can have irreparable consequences.

The findings of the study showed that fetal development, nutrition during pregnancy and complications of pregnancy are sought more by pregnant women. The search for fetal growth is consistent with the study results of Bjelke et al.(2016), Larsson (2009), Gao et al. (2013), Lagan et al. (2010), and the search for nutrition during the pregnancy is in line with the study results of Nasrollahzadeh (2014), Kavlak et al (2012), Gao et al. (2013). The search for complications of pregnancy is also in line with the findings of Gholami and Mohammadi(2015), Bjelke et al (2016), Gao et al. (2013), and Lagan et al. (2010).

The results of the study showed that the criteria for assessing health information in the web sites such as educated authors, educational aspects of content, confidentiality, and the observance of fairness and balance are regarded as some important matters for

pregnant women. However, the results of health internet assessment studies showed that educated authors(Marchica L, Zhao Y, Derevensky J, 2017; Nghiem et al., 2016)confidentiality (Janatian et al., 2014), the observance of fairness and balance (Marchica L, Zhao Y, Derevensky J, 2017) are the criteria which received lower scores. Therefore, health custodians in each country should take measures to increase the quality of information obtained from the internet. This is even more important in developing countries as women in developing countries are more likely to become pregnant than women in advanced countries and consequently, they are in a higher risk of death in these countries (" World Health Organization(WHO)," 2017). The likelihood of death of a 15-year-old woman due to pregnancy is 1 out of every 4,900 pregnant women among the developed countries, while it is 180 people per 1 person among the developing countries. In vulnerable countries, the number is 1 for 54 people and all these matters refer to the weaknesses of the health systems and lack of accurate informing in these countries (" World Health Organization(WHO)," 2017).

Familiarity of pregnant women with valid health websites can lead to the use of high-quality information and better understanding and more informed decisions. Therefore, pregnant women should note that the health information obtained from the internet cannot be replaced by medical advices, and they should consult with their physician about the information. Since pregnant women use the Internet for obtaining health information, and given the lack of full familiarity with the use of the Internet and health information assessment criteria, doctors and midwives should be informed about the extent of the use of the Internet by their patients and along with librarians and medical informants lead them to high-quality and reputable websites.

References:

Aref-Adib, G., O'Hanlon, P., Fullarton, K., Morant, N., Sommerlad, A., Johnson, S., Osborn, D., 2016. A qualitative study of online mental health information seeking behaviour by those with psychosis. BMC Psychiatry 16, 232.

Berland, G.K., Elliott, M.N., Morales, L.S., Algazy, J.I., Kravitz, R.L., Broder,

M.S., Kanouse, D.E., Muñoz, J.A., Puyol, J.-A., Lara, M., 2001. Health information on the Internet: accessibility, quality, and readability in English and Spanish. jama 285, 2612–2621.

Bernstam, E. V, Sagaram, S., Walji, M., Johnson, C.W., Meric-Bernstam, F., 2005. Usability of quality measures for online health information: Can commonly used technical quality criteria be reliably assessed? Int. J. Med. Inform. 74, 675–683.

Bjelke, M., Martinsson, A.-K., Lendahls, L., Oscarsson, M., 2016. Using the Internet as a source of information during pregnancy—A descriptive cross-sectional study in Sweden. Midwifery 40, 187–191.

Cline, R.J.W., Haynes, K.M., 2001. Consumer health information seeking on the Internet: the state of the art. Health Educ. Res. 16, 671–692.

Coulter, A., Ellins, J., Swain, D., Clarke, A., Heron, P., 2006. Assessing the quality of information to support people in making decisions about their health and healthcare. Pick. Inst. Eur. 70. doi:10.1093/eurpub/cki004

Dubowicz, A., Schulz, P.J., 2015. Medical information on the internet: a tool for measuring consumer perception of quality aspects. Interact. J. Med. Res. 4.

Eysenbach, G., Gray, J.A.M., Bonati, M., Arunachalam, S., Diepgen, T.L., Impicciatore, P., Pandolfini, C., 1998. Towards quality management of medical information on the internet: evaluation, labelling, and filtering of informationHallmarks for quality of informationQuality on the internetAssuring quality and relevance of internet information in the real world. Bmj 317, 1496–1502.

Fox, S., 2006. Online Health Search 2006. Pew Internet and American Life Project. October 29, 2006.

Gao, L., Larsson, M., Luo, S., 2013. Internet use by Chinese women seeking pregnancy-related information. Midwifery 29, 730–735.

Gholami, K., Mohammadi, S., 2015. Information Interaction of Pregnant Women in Ninisite. Hum. Inf. Interact. 1, 305–318.

Grimes, H.A., Forster, D.A., Newton, M.S., 2014. Sources of information used

by women during pregnancy to meet their information needs. Midwifery 30, e26–e33.

Internet World Stats Usage and Population Statistics, 2017. URL http://www.internetworldstats.com/stats.htm

Janatian, S., Mojiri, S., Shahrzadi, L., Al., E., 2014. Evaluating the Quality of Persian Depression Websites Based On Webmedqual Scale. J. Heal. Inf. 17, 89–98.

Kavlak, O., Atan, Ş.Ü., Güleç, D., Öztürk, R., Atay, N., 2012. Pregnant women's use of the internet in relation to their pregnancy in Izmir, Turkey. Informatics Heal. Soc. Care 37, 253–263.

Lagan, B.M., Sinclair, M., George Kernohan, W., 2010. Internet use in pregnancy informs women's decision making: a web- based survey. Birth 37, 106–115.

Lalazaryan A, ZareFarashbandi F, Rahimi A, Hassanzade A, 2015. The Impact of Personal Factors on Diabetic Patient's Health Information Seeking Behavior. J. Heal. Adm. 17, 97–108.

Larsson, M., 2009. A descriptive study of the use of the Internet by women seeking pregnancy-related information. Midwifery 25, 14–20.

Lee, Y.J., Boden-Albala, B., Larson, E., Wilcox, A., Bakken, S., 2014. Online health information seeking behaviors of Hispanics in New York City: a community-based cross-sectional study. J. Med. Internet Res. 16, e176.

Marchica L, Zhao Y, Derevensky J, 2017. An Analyses of Health-Related Information Using Gambling-Related Keywords. J. Subst. Abus. Alcohol. 5.

Marton, C., 2010. Understanding how women seek health information on the web. PhD Dissertation, University of Toronto, Toronto, ON, Canada.

World Health Organization(WHO). Maternal mortality, 2017. URL http://www.who.int/mediacentre/factsheets/fs348/en/ (accessed 7.20.17).

McBride, J.A., Carson, C.C., Coward, R.M., 2017. Readability, credibility and quality of patient information for hypogonadism and testosterone replacement therapy on the Internet. Int. J. Impot. Res.

Nasrollahzadeh, S., 2014. Health Information-Seeking Behavior of Pregnant Women: A Grounded Theory Study. Hum. Inf. Interact. 4, 270–281.

Nghiem, A.Z., Mahmoud, Y., Som, R., 2016. Evaluating the quality of internet information for breast cancer. The Breast 25, 34–37.

Ogan, C.L., Ozakca, M., Groshek, J., 2008. Embedding the internet in the lives of college students online and offline behavior. Soc. Sci. Comput. Rev. 26, 170–177.

Okhovati M, Sharifpoor E, HamzehZadeh M, Shahsavari M, Soltanshahi, M., 2016. The Role of Public Libraries on Kerman Health Information Seeking Behavior. J. Heal. Biomed. Informatics 3, 48–56.

Santis, M. De, De Luca, C., Quattrocchi, T., Visconti, D., Cesari, E., Mappa, I., Nobili, E., Spagnuolo, T., Caruso, A., 2010. Use of the Internet by women seeking information about potentially teratogenic agents. Eur. J. Obstet. Gynecol. Reprod. Biol. 151, 154–157.

Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A.-B., Daniels, J., Gülmezoglu, A.M., Temmerman, M., Alkema, L., 2014. Global causes of maternal death: a WHO systematic analysis. Lancet Glob. Heal. 2, e323–e333.

Shieh, C., McDaniel, A., Ke, I., 2009. Information–Seeking and its Predictors in Low- Income Pregnant Women. J. midwifery women's Heal. 54, 364–372.

Turgut, E., 2010. Online health information seeking habits of middle aged and older people: a case study. Citeseer.

Yan, Y.Y., 2010. Online Health Information Seeking Behavior in Hong Kong: An Exploratory Study. J. Med. Syst. 34, 147–153. doi:10.1007/s10916-008-9226-9

Ybarra, M., Suman, M., 2008. Reasons, assessments and actions taken: sex and age differences in uses of Internet health information. Health Educ. Res. 23, 512–521.

Yoo, E.-Y., 2004. Factors affecting middle-aged women's health information seeking on the Web Dissertation ed. Madison, WI: University of

Wisconsin.

Zuckerman, M., 2009. Online health information seeking behaviors among college undergraduates. University of Maryland, Baltimor Country.