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Gender Difference in eHealth Literacy: Empirical Evidence from Turkey

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Abstract

People in the world became more eager to use digital health services and search health information online more often with the effect of COVID-19. Even before the pandemic, Turkish people started to use the Internet as a source for getting health related information according to Turkish Statistical Institute data. There is always some difference between men and women in various attitudes, perceptions, or behaviors. It is believed that gender also matters while searching health related information. This study examined the difference between men and women according to eHealth literacy. Gender differences were analyzed based on an online survey obtained from 520 Turkish Internet users. There was a significant difference between men and women according to their eHealth Literacy. Results showed that women felt more confident and skilled for searching health-related information online, so they found to be more highly eHealth literated than men.

Keywords: eHealth Literacy, Digital Health Service, Gender Difference, Turkish Consumers, T-test.

Introduction

The Internet, as an important information source is now widely accessed and used by the general population worldwide. According to Hootsuite "we are social" Turkey report, Internet penetration in Turkey has risen from 58% in 2016 to 77.7% in 2021 (Kemp, 2021). This is a fast shift when the huge population (84 million) of the country is taken into consideration. But of course, the main purposes of people using the Internet should also be questioned. Since, the change in information technology and the habits of people directly affect the reasons behind using this technology. Turkish Statistical Institute conducts a research every six months for "Information and Communication Technology Usage Survey on Households" and one of the main topics in this survey is the purpose of people using the Internet. For example, in 2009 people mostly used the Internet for e-mailing (72.4%), and reading newspapers (70%) (TUIK, 2009). But when checked on 2020, the same research gives us different outcomes. Today people use the Internet mostly for instant messaging (95.1%), making calls over Internet

(88.1%), for accessing their social media accounts (80.2%) and also for searching health related information online (65.4%).

As more people are getting used to facilitate from the Internet for health-related information, health literacy becomes an important issue. With the help of online information sources people become more knowledgeable about health, but the quality and accuracy of the information matters. If people are in a low health literacy level, the information gathered will not be beneficial to them. So, if people are more health literated they will be more able to differentiate between high and low qualified resources. By this way people will not be eager to visit hospitals unless necessary especially in COVID-19 conditions.

eHealth literacy was the main topic in many studies for years (Norman and Skinner, 2006; Martin, 2008; Van der Vaart *et al.,* 2011; Choi and Dinitto, 2013). But, based on past literature, it is thought that less is known about Turkish people's eHealth Literacy according to gender. The purpose of this paper for this reason is to address the differences between men and women according to their online health seeking abilities, in another words their eHealth Literacy.

Conceptual Background

eHealth Literacy

In today's world there are so many unexpected things happening. One of them is the COVID-19 pandemic. With the effect of the pandemic, people started to act differently from their usual behaviors and habits. One of the mostly affected field from pandemic is the health industry. In normal cases, if a person had a symptom or felt not well was preferring to consult to a doctor by going to hospital. But now, people want to protect themselves from COVID-19, so they postpone and cancel hospital visits. For example in Turkey, due to COVID-19, there are delays in cancer diagnosis and cancer treatments (Kebudi *et al.*, 2021).

With the development of Internet technologies, people began to search for various information online. One of the most searched information types is health related issues. People mostly look for health related information in order to learn more about a symptom they have, or to search for a health problem the people near them have. According to Turkish Statistical Institute (TUIK, 2020), 65.4% of people using the Internet searched health related information online in 2020. This ratio is expected to rise in 2021. "the ability to read, understand, evaluate and use health information to make reasoned and health related decisions" is called health literacy (Huang *et al.*, 2019; p.725). Literacy in health is an important issue, because more literated people will enhance their health-related knowledge and easily access to needed health information. People with low health literacy may misinterpret health information. As a result, the cost of using expensive health care services will decrease if people became more health literated (Paige et al., 2017).

But people are searching more for health-related information online nowadays. So, eHealth Literacy term is now changing place with health literacy. eHealth Literacy has taken interest of many researchers in the last years and has been the subject of many studies (Tennant et al., 2015; Jacobs *et al.,* 2016; Britt *et al.,* 2017; Panahi *et al.,* 2017; Kayser *et al.,* 2018; Huang *et al.*, 2019; Arcury *et al.,* 2020; Hassan and Masoud, 2020; Lwin *et al.,* 2020; Chang *et al.,* 2021). eHealth Literacy is defined as "the ability to seek out, find, evaluate and appraise, integrate, and apply what is gained in electronic environments toward solving a health problem" by Norman and Skinner (2006; p.2). There are so many online health sources today, e.g., web sites, health portals, social networking sites etc. Those facilities ease the way people

access to health information, but the quality, reliability and accuracy of information become another issue. So, the eHealth literacy level of people is an important factor to be emphasized.

Gender Difference in eHealth Literacy

eHealth Literacy is a popular and important concept nowadays. Especially with the unexpected rise of COVID-19, eHealth Literacy become more important because it is really a critical situation to be able to quickly acquire accurate health information (An *et al.,* 2021). Since more people began to search health information online, their ability to use digital technologies is not enough, at the same time they must have the skills and motivation to find and evaluate the needed health information from digital sources (Brørs et al., 2020). On the other hand, low health literacy will result in many negative circumstances like more poor health status, increase in hospital expenses and frequency in visits (Jacobs *et al.,* 2016).

As stated above, eHealth literacy is a significant term in today's world. This concept differs according to several variables like demographic profiles of people. One of the important factors that should be taken into consideration is gender. Since men and women differ in many aspect eHealth Literacy is also thought to be a term worth checking for the difference. In a study conducted by Yaşin and Özen (2011) in Turkey, women were found to perceive eHealth information quality higher than men. A study held by Bidmon and Terlutter (2015) in Germany found that women had more positive attitude toward web and were more willing to use online sources for searching health-related information. Baumann et al. (2017) also searched for gender difference in a German sample. They found that women were using websites that have health related content significantly more often than men. In another study held by Escoffery (2018) with U.S. adults, no significant difference was found between women and men in their total eHealth Literacy scores, but compared to men, women were more likely to search health information online.

When the academic literature is checked for gender specific studies about eHealth Literacy, there found to be limited research about this topic. Understanding the difference of eHealth Literacy between men and women is considered an important issue especially in this pandemic conditions. For this reason, the main objectives of this study are:

- To examine if eHealth Literacy differ according to gender in Turkish Internet users
- If the difference between men and women is significant, which gender is more eHealth Literated?

So, this study aims to answer the research question: "Do people differ according to gender in their eHealth Literacy?" and hypothesizes that:

H_1: People's eHealth Literacy differ according to gender.

Methodology

Sample Characteristics

Since men and women differ in many aspects, this study seeks to understand if they also differ in their eHealth Literacy. The data of this study were collected via an online survey through Google forms. The participants were briefly informed about the aim of the study and invited to fill the online questionnaire. People above 18 and who were interested in searching health related information online completed the survey, they were also asked to send the survey link to their friends that are also interested in searching health information online. 520 valid questionnaire forms were collected. From the participants, most of them were female with 367 and 70.6%. And 153 of them were male with 29.4%. The demographic characteristics of the sample according to gender is summarized in the following table.

Table 1
Respondent Characteristics

	Female / n (%)	Male / n (%)	Total / n (%)
Age			
18-25	46 (12.5)	18 (11.8)	64 (12.3)
26-33	65 (17.8)	24 (15.7)	89 (17.1)
34-41	94 (25.6)	24 (15.7)	118 (22.7)
42-49	83 (22.6)	28 (18.3)	111 (21.4)
50-57	55 (15)	27 (17.6)	82 (15.8)
58-65	24 (6.5)	25 (16.3)	49 (9.4)
66 and above	0 (0)	7 (4.6)	7 (1.3)
TOTAL	**367**	**153**	**520**
Education			
Have not completed high school	12 (3.3)	1 (0.7)	13 (2.5)
High School	73 (19.9)	15 (9.8)	88 (16.9)
University	236 (64.3)	104 (68)	340 (65.4)
MS/Doctorate	46 (12.5)	33 (21.5)	79 (15.2)
TOTAL	**367**	**153**	**520**
Income Level (Turkish Lira/₺)			
3.000 ₺ and below	81 (22.1)	21 (13.7)	102 (19.6)
3.001 ₺ – 6.000 ₺	152 (41.4)	62 (40.5)	214 (41.2)
6.001 ₺ – 9.000 ₺	81 (22.1)	42 (27.5)	123 (23.7)
9.001 ₺ – 12.000 ₺	25 (6.8)	10 (6.5)	35 (6.7)
12.001 ₺ – 15.000 ₺	7 (1.9)	6 (3.9)	13 (2.5)
15.001 ₺ - 18.000 ₺	7 (1.9)	4 (2.6)	11 (2.1)
18.001 ₺ - 21.000 ₺	9 (2.5)	3 (2.0)	12 (2.3)
21.001 ₺ and above	5 (1.4)	5 (3.3)	10 (1.9)
TOTAL	**367**	**153**	**520**
Marital Status			
Single	95 (25.9)	36 (23.5)	131 (25.2)
Married	248 (67.6)	114 (74.5)	362 (69.6)
Divorced/Separated/Widowed	24 (6.5)	3 (2)	27 (5.2)
TOTAL	**367**	**153**	**520**

Participants of the survey were mostly between ages 34 and 57. They were highly educated people in both genders. 64.3% of female and 68% of male were holding a university degree. The majority of the participants were married. On the other hand, when the minimum wage in Turkey is considered as 2324.70 Turkish Lira at the time of the study (May 2020), the income levels of the participants from both genders are above the minimum wage.

Checking the frequencies and percentages of the men and women using the Internet in Turkey and their usage purposes is thought to held light to this study. According to Turkish Statistical Institute (TUIK) "Information and Communication Technology Usage Survey on Households" 2020, in Turkey 79% of people are using the Internet. 65.4% of those people who have access to Internet used it for seeking health related information. On the other hand, 67.8% of Turkish women Internet users' purpose for using it was for seeking health related information, this proportion was 63.2 for men.

Measures

This study aimed to measure Turkish internet users' ability to find and evaluate online health related information according to gender. The participants of this study were asked to answer the questions about eHealth Literacy. They evaluated 8 items and indicated their level of agreement to statements on a five-point likert type scale which ranged from (1) strongly disagree to (5) strongly agree. eHealth Literacies of the people who participated the survey were assessed using Norman and Skinner's (2006) eHealth Literacy Scale (eHEALS).

Results

All analyses were conducted in SPSS. First, in order to assess the internal consistency of the variables and test if the variables are consistent in what they are intended to measure, the Cronbach's Alpha coefficient of the eHealth Literacy scale was calculated. Since Cronbach's Alpha is a widely used measure for reliability, this study also evaluates the reliability of eHealth Literacy according to it.

Table 2
E-Health Literacy Variables' Reliability Coefficients

	Mean	Std. Deviation	Cronbach's Alpha if Item Deleted
I know what health resources are available on the Internet	3,4000	,99012	,949
I know where to find helpful health resources on the Internet	3,4231	1,03403	,946
I know how to use the health information I find on the Internet to help me	3,5096	1,03126	,943
I know how to find helpful health resources on the Internet	3,5346	1,02510	,942
I have the skills I need to evaluate the health resources I find on the Internet	3,4942	1,08234	,945
I know how to use the Internet to answer my questions about health	3,6750	1,02575	,946
I can tell high quality health resources from low quality health resources on the Internet	3,5365	1,08529	,948
I feel confident in using information from the Internet to make health decisions	3,5096	1,08764	,948

The reported Cronbach's Alpha coefficient value of the scale was found to be 0.952. The scale reliability is above the acceptable level which is 0.7 (Hair *et al.,* 2014), so it was found to be reliable in a satisfactory level. All of the items were also checked as stated on the table above, and there was no need to delete any of them for increasing Cronbach's Alpha coefficient. The means of all items were above the neutral level "3" neither agree nor disagree.
To determine the eHealth Literacy differences of men and women and to test the hypothesis two sample t-test was employed. The significance levels for all tests were set as $p < 0.05$.

Table 3
T-test Results for eHealth Literacy

	Female	**Male**	**t (df)**	**Sig. (p)**
I know what health resources are available on the Internet	3.46	3.25	2.16 (518)	0.031
I know where to find helpful health resources on the Internet	3.49	3.27	2.12 (518)	0.034
I know how to use the health information I find on the Internet to help me	3.64	3.19	4.56 (518)	0.000
I know how to find helpful health resources on the Internet	3.63	3.29	3.49 (518)	0.001
I have the skills I need to evaluate the health resources I find on the Internet	3.61	3.22	3.74 (518)	0.000
I know how to use the Internet to answer my questions about health	3.76	3.47	2.95 (518)	0.003
I can tell high quality health resources from low quality health resources on the Internet	3.63	3.30	3.22 (518)	0.001
I feel confident in using information from the Internet to make health decisions	3.62	3.25	3.48 (518)	0.001

As shown in Table 3, there were significant differences in all of the items between women and men participants. Women reported higher scales in all of them, so it can be said that they were more health literated when compared to men. The highest significant mean difference

between men and women was in "I know how to use the health information I find on the Internet to help me". On the other hand, for all of the 8 items, weighted means of sum scores were calculated for men and women. T test was also executed between the weighted means scores of women and men. Women had higher eHealth Literacy on an aggregate level than men and the average mean difference between them was significant (Women Mean: 3.6, Men Mean: 3.28, t: 3.73 (518), p= .000).

Discussion, Implications and Limitations

Internet is a vast resource for all kind of information for the humanity. Types of health-related information are diverse and accessible through the Internet quickly and easily. These resources affect the way people are searching health information. Online health related information could be found by many ways like search engines, blog sites, social networking sites, forums, online health communities and crowdsourcing sites (Zhang *et al.,* 2017). In addition to that information sources health apps and wearable technologies should also be considered. While there are so many information sources online, the quality, reliability, and the accuracy of them is also an important issue.

One of the latest definitions of health literacy made by Dodson et al. (2015; p.7) defines it as "the personal characteristics and social resources needed for individuals and communities to access, understand, appraise and use information and services to make decisions about health". In this respect while considering health literacy, the characteristics and personal skills of people also gain importance. In addition to that, in eHealth Literacy, digital skills are also important for accessing and being able to use the health-related information gathered online. Access to health information is not restricted according to age, gender, income, or any type of demographic data. But evaluating the information gathered through online channels differs according to gender. The study findings indicate that gender matters for eHealth Literacy. This study found similar outcomes when compared to past studies conducted about eHealth Literacy according to gender differences in different cultures (Bidmon and Terlutter, 2015; Baumann et al., 2017; Escoffery, 2018). Women who participated in this study reported higher eHealth Literacy then men. It can be said that; they better know the health resources available online, they better know where to find helpful health resources, they better know how to use the information they found from the Internet, they better know to find helpful health resources online, they have the skills they need to evaluate the information they found, they feel more confident in using online health related information while making decisions and they can better differentiate between high and low quality health resources. The greater difference between men and women in this respect is about knowing how to use health information found online to help oneself.

The differences between men and women should be taken into consideration in online health information seeking. Their abilities and skills are another important issue for health information providers. This study confirmed that Turkish Internet users differ in gender according to their eHealth Literacy. So, health communication over online health web sites, blogs, social networking sites, mobile apps should be made according to those differences. In this respect, women's knowledge, ability, and confidence are obvious. In Turkey, women are more active in social networks, they are seeking health information online more than men (TUIK, 2020). They are slightly more interactive in Facebook (posts liked and number of advertising clicked) (Kemp, 2021). The reasons behind eHealth Literacy difference may occur because of above mentioned characteristic of women living in Turkey. In this study the majority of the participants were married women. Information seeking during pregnancy and

breast feeding is a common behavior. On the other hand, women that have children used to search for information about their children's development and the symptoms their children have when they got sick more than men. So, those may be the additional underlying factors about the differences between gender.

While skills and abilities of people are important facts in understanding eHealth information, the credibility and trustworthiness of the information sources are also important facts. Since, people with low eHealth Literacy may be negatively affected with inaccurate information. So, online health information providers should also pay attention for publishing accurate information. On the other hand, people that are low eHealth literated may be more willing to physically visit their doctors. When considered the pandemic conditions, people should avoid from going to hospitals. For this reason, online health information providers should assure reliable and easy to understand content, so that even low health literated people should be able to grasp and use the needed information.

Besides, this study also advices health information providers to create more and gender-specific content for men. Since men were found to be less health literated, online health information providers could promote health-information search behavior among men by integrated marketing communication attempts. But also, specific content for women should be created for further increase their eHealth Literacy. Thus, providing information relevant to both women and men' preferences should also be taken into account.

This study has several contributions both to theory and practice. First, this study examined literacy in a domain specific context, which was online health information. On the other hand, there are some studies directly examining the difference of eHealth Literacy according to gender, but those studies were held in developed countries such as Germany and the US. A study directly conducted in a developing country such as Turkey did not exist, so this study is the first in this context. So, the findings of the study will guide other researchers that also plan to focus on health related issues in Turkey. Men and women differ in their behaviors, attitudes, and perceptions. As this study showed, the way they evaluate and search for health information also differ, so this study gives many cues to Turkish digital health content creators while generating gender specific content. Especially the content created for men should be easier to understand.

Future studies may take different factors about online health for determining the differences between gender. On the other hand, the underlying factors behind eHealth Literacy may be employed to deeply understand men and women behaviors. Gender difference according to eHealth Literacy was examined in Germany and U.S. in past studies, this study also found out the difference for Turkish Internet users. Differences between gender may be searched for different cultures to verify the findings of the study.

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