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**Research Paper – Araştırma Makalesi**

# DETERMINATION OF INTERNET USE AMONG PREGNANT WOMEN AND AFFECTING FACTORS: AN ANALYTICAL AND CROSS-SECTIONAL STUDY

# GEBE KADINLARDA İNTERNET KULLANIMININ BELİRLENMESİ VE ETKİLEYEN FAKTÖRLER: ANALİTİK VE KESİTSEL BİR ÇALIŞMA

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**Özet**

Araştırma, gebelerin internet kullanım durumlarını ve etkileyen faktörleri saptamak amacı ile yapılmıştır. Tanımlayıcı ve kesitsel tipteki bu araştırma Ocak-Haziran 2021 tarihleri arasında üniversitesi hastanesi Kadın hastalıkları ve doğum polikliniğine başvuran en az 28 haftalık 403 gebe ile yürütülmüştür. Veriler anket formu kullanılarak toplanmıştır. Verilerin analizi tanımlayıcı istatistikler, ki-kare testi ve post hoc analizi ile gerçekleştirilmiştir. Gebelerin %43,3'ünün interneti sürekli, bilgiye hızlı ve kolay erişim sağlamak için kullandıkları, %78,9'unun interneti her gün kullandığı, %28,3'ünün internette en yaygın olarak aradıkları konunun sağlıklı yaşam tarzı geliştirme olduğu, %65'inin gebelik öncesi döneme göre interneti daha fazla kullandığı, %54,6'sının internette buldukları bilgiye güvendikleri saptanmıştır. Gebelik haftası 33 ve altında, doğum öncesi sağlık bakım hizmeti alan ve planlı gebeliği olan kadınların interneti daha fazla kullandığı ve güvendiği bulunmuştur. ($p<0,05$). Bu çalışma gebelikte internet kullanım durumu ile gebelerin sosyodemografik ve obstetrik özellikleri arasında istatistiksel olarak anlamlı ilişki olduğunu ortaya koymuştur.

**Anahtar Kelimeler:** Bilgiye Ulaşmak, Bilgi Arama Davranışı, İnternet Kullanımı, Gebelik, Gebe Kadın

**Abstract**

This research aimed to determine internet use during pregnancy and the affecting factors. This analytical and cross-sectional study was carried out with 403 pregnant women who were at least 28 weeks pregnant and applied to the obstetrics outpatient clinic of a university hospital between January and June 2021. The data was collected through survey and was analyzed using descriptive statistics, chi-square test, and post hoc analysis. It was determined that 43.3% of pregnant women used the internet due to the continuous, fast, and easy access; 78.9% of them searched for information on the internet every day. The most often searched topics on the internet were developing a healthy lifestyle (28.3%) and fetal development, (24.0%) respectively. The rate of those who used the internet more during pregnancy compared to the pre-pregnancy period was 65.0%, and 54.6% of women usually trusted the information they found on the internet. Pregnant women aged 28 or younger, graduted university and above, having an income exceeding their expenses, being employed, being primigravida, being in the gestational week of 33 or less, receiving prenatal health care services, and planning their pregnancy used the internet more ($p<0.05$) and trusted the information they accessed on the internet ($p<0.05$). This study is important since it revealed that internet use by pregnant women increased compared to the pre-pregnancy period and that sociodemographic and obstetric variables were effective in internet use among pregnant women.

**Keywords:** Access To Information, Information Seeking Behavior, Internet Use, Pregnancy, Pregnant Women

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## 1. INTRODUCTION

Pregnancy is a period that gives women the opportunity to learn, plan, and prepare for motherhood and requires compliance with physiological, psychological, and social changes in their lives (Herman et al., 2014, pp. 450-461; Zhu et al., 2019, pp. 1-12). In this process, pregnant women constantly search for information about the changes in their physical and mental states, find solutions to health problems, and prepare for delivery (Dinç et al., 2014, pp. 68-76; Evcili, 2019, pp. 409-414). For this purpose, they obtain information from health professionals, newspapers, magazines, books, libraries, television, and the internet, or from relatives, neighbors, and friends. In recent years, due to the ease of access with the spread of technology, the internet has become a first-choice source of health information for pregnant women (Kamali et al., 2017, pp. pp. 24-37; Baker and Yang, 2018, pp. 31-34; Zhu et al., 2019, pp. 1-12; Ghiasi, 2021, pp. 1320-1330).

Pregnant women may not get sufficient information from health institutions due to factors such as the embarrassment of talking about pregnancy issues, inability to reach health professionals or waiting for a long time in front of the clinic, negative attitudes of health professionals, lack of time, language barriers, and economic problems (Das Sarkar, 2014, pp. 251–262; Chan and Chen, 2019, pp. 11836; Ghiasi, 2021, pp. 1320-1330). Therefore, they use the internet, which can be easily accessible to meet their information needs, more (Bert et al., 2013, pp. 1013-1018; Huberty et al., 2013, pp. 1363–1372; Bjelke et al., 2016, pp. 187–191; Wallwiener et al., 2016, pp. 937–944; Ford ve Alwan, 2018, pp. 5294–5303; Jacobs et al., 2019, pp. 9-14). In a previous study, it has been found that pregnant women used the internet since it is easy to access information instantly, information is regularly transferred, detailed information is provided, pregnancy experiences are presented entertainingly, information is customized according to the person, it is practical and easy to interact with professional people, and it is reassuring and objective (Lupton, 2016, pp. 171).

Today, the internet is considered the most popular and easiest way to get information on health-related topics (Gao et al., 2013, pp. 730–735; Kraschnewski et al., 2014; Sayakhot and Carolan-Olah, 2016, pp. 61; Dai et al., 2022, pp. 1281-1289). Through internet access, pregnant women can easily access pregnancy-related information anytime and anywhere (Tripp et al., 2014, pp. 64–67; Robinson and Jones, 2014, pp. 23–25). It has been stated that pregnant women do not know how to evaluate the accuracy of information during pregnancy, do not check the source of information, misuse the internet, and receive information from unreliable and misleading internet sources (Lagan et al., 2010, pp. 106–115; Öztürk et al., 2020, pp. 210-220). Therefore, women's information needs during pregnancy, sources of information, frequency of reaching information, and reliability of information have become issues that should be addressed by health professionals working in the field of women's health. Today, when technological developments accelerate, mobile health applications are rapidly used in the field of obstetrics. For this reason, it is essential to determine women's use of internet-based digital technologies during pregnancy. This study aimed to determine pregnant women's internet use and the factors affecting it, and how the internet affects women's pregnancy processes.

## 2. METHODS

### 2.1. Study design, setting and participants

This analytical and cross-sectional study was conducted in the gynecology and obstetrics clinic of a university hospital in a city located in western Turkey. Pregnant women with different socioeconomic statuses apply to this hospital. The annual number of pregnant women who apply to the obstetrics outpatient clinic was 12,894. The sample size was calculated using the formula ($n=N^2.p.q/S^2(N-1)+t^2q$) which is used when the number of individuals in the population is known. The sample size was determined as 370 based on the research conducted by Kavlak et al. (2012), considering the rate of internet use among pregnant women as 45% ($p = 0.45$) with a probability of 95% ($\alpha = 0.05$), a deviation of $d = 0.05$, $q = 0.55$, and $t = 1.96$. (G Power) Considering potential losses, approximately 10% of the sample size was added and the study was completed with 403 pregnant women (Sümbüloğlu and Sümbüloğlu, 2005). The random sampling method, one of the improbable sampling methods, was used for sample selection in the research. The inclusion criteria for pregnant women were being aged over 18, being in the gestational week of at least 28 weeks (neden olduğunu belirt), being literate, being able to use the internet, and being able to read and understand Turkish. Pregnant women with communication disabilities such as visual and hearing impairment were excluded from the research.

### 2.2. Variables of the Study

The dependent variables of the research were the reasons for using the internet to access information, the need for information, the time spent on the internet to get information, the status of accessing information, the rate of using the internet compared to the pre-pregnancy period, the status of trusting the information accessed on the internet, the status of verifying the information obtained from health professionals using the internet, and the effect of the internet on the decision regarding the mode of delivery. The independent variables were sociodemographic characteristics (age, education status, employment status, income status) and obstetric characteristic (number of pregnancies, gestational week, prenatal health care, having a planned pregnancy).

### 2.3. Data Collection Tools and Measurements

The data were collected using a survey which was prepared by the researchers according to the literature (Larsson, 2009, pp. 14–20; Lagan et al., 2010, pp. 106–115; Lagan et al., 2011, pp. 336–345; Bert et al., 2013, pp. 1013-1018; Gao et al., 2013, pp. 730–735; Bjelke et al., 2016, pp. 187–191; Lupton, 2016, pp. 171; Sayakhot and Carolan-Olah, 2016, pp. 61; Kamali et al., 2017, pp. 24-37; Baker and Yang, 2018, pp. 31-34; Jacobs et al., 2019, pp. 9-14). The form consists of three sections, sociodemographic (age, education, employment and income status) and obstetric characteristics (number of pregnancies, gestational week, prenatal health care, having a planned pregnancy), and internet use during pregnancy (information needs, making a decision, verifying information, providing support, etc.), and a total of 47 open/closed questions.

The study data were collected from pregnant women who were at least 28 weeks pregnant old and applied to the obstetrics outpatient clinic of a university hospital for follow-

up or control examination between January and June 2021. The survey was filled in with pregnant women using the face-to-face interview technique. Before the interview, pregnant women were informed about the scope of the study, that the research aimed to determine internet use among pregnant women, that their answers to the questions would be kept confidential, and that their identity or names would not be written on the form. The data were collected in an empty or suitable room in the clinic in order to carry out the interviews in a healthy manner and ensure the privacy of the pregnant women. It took 20 minutes to complete the survey.

### 2.4. Data analysis

Statistical analyses of the data were performed with the licensed SPSS 26.0 (forMacOS) package program. Descriptive statistics were presented as mean (± standard deviation, SD) or median (25-75% or minimum, maximum), frequency, and percentage. The intergroup comparison of the categorical data was performed using the chi-square test and post hoc analysis. Type-1 error was taken as 0.05%.

### 2.5. Ethical consideration

Ethical approval was taken from the Noninvasive Clinical Research Ethics Committee of the Nursing Faculty of Aydın Adnan Menderes University (number: 2020/207, date: 10/9/2020). To carry out the research, institutional permission was taken from the university hospital. The pregnant women participating in the study were informed about the research and their written consent was taken. No pressure was exerted on pregnant women regarding participation in the study and voluntary participation was ensured.

## 3. RESULTS

The sociodemographic and obstetric characteristics of the pregnant women are given in Table-1. The mean age of the pregnant women was 28.3 ± 5.8 (min – max = 18 - 41). Of the pregnant women, 96.5% were married; 64.8% were high school and below; 63.3% were unemployed; 64.5% had an income equal to or less than their expenses; 86.1% were multigravida; 51.1% had a gestational week of 33 weeks or less. The mean gestational week was 33.3 ± 3.3 (min-max=28-41). Of the pregnant women, 65.0% did not receive prenatal health care support and 68.7% had a planned pregnancy.

**Table 1:** Distribution characteristics of pregnant

| **Sociodemographic characteristics** | **Mean±SD** | **Min-Max** |
|---|---|---|
| **Age** | 28.3 ± 5.8 | 18.0-41.0 |
| ≤ 28 | 221 | 54.9 |
| >28 | 182 | 45.1 |
| **Education level** | | |
| High school and below | 261 | 64.8 |
| University and above | 142 | 35.2 |
| **Employment status** | | |
| Employed | 148 | 36.7 |

| | | |
|---|---|---|
| Unemployed | 255 | 63.3 |
| **Income status** | | |
| Income > Expenses | 143 | 35.5 |
| Income ≤ Expenses | 260 | 64.5 |
| **Gestational week** | 33.3 ± 3.3 | 28.0-41.0 |
| **Number of pregnancies** | | |
| Primigravida | 56 | 13.9 |
| Multigravida | 347 | 86.1 |
| **Gestational week** | | |
| ≤ 33 | 206 | 51.1 |
| >33 | 197 | 48.9 |
| **Status of receiving prenatal health care** | | |
| Yes | 141 | 35.0 |
| No | 262 | 65.0 |
| **Status of having a planned pregnancy** | | |
| Yes | 277 | 68.7 |
| No | 126 | 31.3 |

Pregnant women included in the study sought information on the internet mostly due to 24/7, fast, and easy access (43.3%). They looked for information on the internet mostly during the first trimester of pregnancy. (38.5%). Of the pregnant women, 47.6% used the internet for two hours or more a day; 52.9% usually found the information they searched on the internet; 28.3% searched most commonly for developing a healthy lifestyle and 24.0% searched for fetal development on the internet; 65.0% used the internet more since pregnancy; 54.6% reported that they generally confidential the information they sought on the internet; 64.5% did not confirm the information they received from the health professional on the internet; 73.9% tended to vaginal delivery more with internet use. (Table 2)

**Table 2:** Distribution of pregnant women according to internet use during pregnancy

| | **n** | **%** |
|---|---|---|
| ***Reasons for using the internet to access information** | | |
| Finding information anonymously | 305 | 38.8 |
| 24/7, fast and easy access to the internet | 340 | 43.3 |
| Possibility to interact with health professionals on the internet | 98 | 12.5 |
| Neutral and safe | 43 | 5.5 |
| ***Need for information-seeking** | | |
| In the first trimester | 185 | 38.5 |
| In the second trimester | 49 | 10.2 |
| In the third trimester | 133 | 27.7 |
| Throughout pregnancy | 113 | 23.5 |
| **Time spent on the internet to get information** | | |
| Less than one hour/day | 113 | 28.0 |
| One hour/day | 98 | 24.3 |
| Two hours or more/day | 192 | 47.6 |
| **Status of accessing the information about pregnancy sought on the internet** | | |
| Always | 71 | 17.6 |
| Usually | 213 | 52.9 |
| Sometimes / Never | 119 | 29.5 |
| **Rate of using the internet during pregnancy compared to the pre-pregnancy period** | | |
| More | 262 | 65.0 |
| Less | 14 | 3.5 |

| | | |
|---|---|---|
| No change | 127 | 31.5 |
| **Status of trusting information accessed on the internet** | | |
| Always | 56 | 13.9 |
| Usually | 220 | 54.6 |
| Never/Partially | 127 | 31.5 |
| **Verifying information received from a health professional on the internet** | | |
| Yes | 143 | 35.5 |
| No | 260 | 64.5 |
| **Effect of the internet on the decision about the mode of delivery** | | |
| Vaginal | 298 | 73.9 |
| Cesarean | 105 | 26.1 |

* More than one option is marked.

In Table 3, there is a statistically significant difference between the need for information-seeking according to the pregnancy period, the time spent on the internet to get information, the status of accessing the information on the internet, the rate of using the internet compared to the pre-pregnancy period, and the effect of the internet on the decision about the mode of delivery and the age variable ($p<0.05$). A statistically significant difference was found between the pregnant women with high school degree or lower degrees and those who had an associate degree, bachelor's degree, or postgraduate degree in terms of the time spent on the internet to get information, the status of accessing the information on the internet, the effect of accessing the information on the internet on pregnancy, the rate of using the internet compared to the pre-pregnancy period, and the status of trusting the information accessed on the internet ($p<0.05$). There was a statistically significant difference between employed and unemployed women in terms of the need for information-seeking according to the pregnancy period, the time spent on the internet to get information, the effect of accessing the information on the internet on pregnancy, the rate of using the internet compared to the pre-pregnancy period, the status of trusting the information accessed on the internet, and the effect of the internet on the decision about the mode of delivery ($p<0.05$). A statistically significant difference was found between the pregnant women who had an income more than their expenses and those who had an income equal to or less than their expenses in terms of the reason for using the internet to get information, the time spent on the internet in a day, the status of accessing the information on the internet, the contribution of the internet compared to other types of social support, and the status of trusting the information accessed on the internet ($p<0.05$).

**Table 3:** Comparison of internet use during pregnancy according to sociodemographic characteristics

| | **Age** | | | | **$\chi^2$ p** | **Education level** | | | | **$\chi^2$ p** | **Employment status** | | | | **$\chi^2$ p** | **Income level** | | | | **$\chi^2$ p** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **≤28** | | **>28** | | | **High school and below** | | **University and above** | | | **Employed** | | **Unemployed** | | | **Income > Expenses** | | **Income ≤ Expenses** | | |
| | **n** | **%** | **n** | **%** | | **n** | **%** | **n** | **%** | | **n** | **%** | **n** | **%** | | **n** | **%** | **n** | **%** | |
| ****Reasons for using the internet to access information** | | | | | | | | | | | | | | | | | | | | |
| Finding information anonymously | 136 | 37.6 | 169 | 39.9 | 5.949 | 191 | 40.4 | 114 | 36.4 | 3.447 | 120 | 36.9 | 185 | 40.1 | 2.307 | 122 | 41.5[a] | 183 | 37.2[a] | 28.467 |
| 24/7, fast and easy access to the internet | 170 | 47.0 | 170 | 40.1 | | 205 | 43.3 | 135 | 43.1 | | 141 | 43.4 | 199 | 43.2 | | 122 | 41.5[a] | 218 | 44.3[a] | |
| Possibility to interact with health professionals on the internet | 42 | 11.6 | 56 | 13.2 | 0.114 | 56 | 11.8 | 42 | 13.4 | 0.328 | 42 | 12.9 | 56 | 12.1 | 0.511 | 21 | 7.1[a] | 77 | 15.7[b] | **0.000*** |
| Neutral and safe | 14 | 3.9 | 29 | 6.8 | | 21 | 4.4 | 22 | 7.0 | | 22 | 6.8 | 21 | 4.6 | | 29 | 9.9[a] | 14 | 2.8[b] | |
| ****Need for information-seeking** | | | | | | | | | | | | | | | | | | | | |
| In the first trimester[(AR=3.1)] | 108 | 45.4[a] | 77 | 31.8[b] | 20.956 | 107 | 38.9 | 78 | 38.0 | 6.175 | 78 | 48.1[a] | 107 | 33.6[b] | 31.688 | 58 | 33.9 | 127 | 41.1 | 2.967 |
| In the second trimester[(AR=2.3)] | 32 | 13.4 | 17 | 7.0[b] | | 21 | 7.6 | 28 | 13.7 | | 0 | .0[a] | 49 | 15.4 | | 21 | 12.3 | 28 | 9.1 | |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | [a] | | | | | | | | 0.103 | | | | [b] | | | | | | 0.397 |
| In the third trimester[(AR=3.5)] | 49 | 20.6 [a] | 84 | 34.7 [b] | **0.000** | 84 | 30.5 | 49 | 23.9 | | 42 | 25.9[a] | 91 | 28.6[a] | **0.000** | 49 | 28.7 | 84 | 27.2 | |
| Throughout pregnancy | 49 | 20.6 [a] | 64 | 26.4 [a] | | 63 | 22.9 | 50 | 24.4 | | 42 | 25.9[a] | 71 | 22.3[a] | | 43 | 25.1 | 70 | 22.7 | |
| **Time spent on the internet to get information** | | | | | | | | | | | | | | | | | | | | |
| Less than one hour/day[(AR=3.2)] | 72 | 35.1 [a] | 41 | 20.7 [b] | 19.171 | 106 | 40.6 [a] | 7 | 4.9[b] | 65.653 | 21 | 14.2[a] | 92 | 36.1 [b] | 54.098 | 28 | 19.6 [a] | 85 | 32.7[b] | 29.341 |
| One hour/day[(AR=3.9)] | 33 | 16.1 [a] | 65 | 32.8 [b] | **0.000** | 63 | 24.1 [a] | 35 | 24.6[a] | **0.000** | 21 | 14.2[a] | 77 | 30.2 [b] | **0.000** | 21 | 14.7 [a] | 77 | 29.6[b] | **0.000*** |
| Two hours or more/day | 100 | 48.8 [a] | 92 | 46.5 [a] | | 92 | 35.2 [a] | 100 | 70.4[b] | | 106 | 71.6[a] | 86 | 33.7 [b] | | 94 | 65.7 [a] | 98 | 37.7[b] | |
| **Status of accessing the information about pregnancy sought on the internet** | | | | | | | | | | | | | | | | | | | | |
| Always[(AR=3.7)] | 22 | 10.7 [a] | 49 | 24.7 [b] | 18.269 | 43 | 16.5 [a] | 28 | 19.7[a] | 42.081 | 28 | 18.9 | 43 | 16.9 | 3.891 | 21 | 14.7[a] | 50 | 19.2[a] | 30.871 |
| Usually | 108 | 52.7 [a] | 105 | 53.0 [a] | **0.000*** | 113 | 43.3 [a] | 100 | 70.4[b] | **0.000*** | 85 | 57.4 | 128 | 50.2 | | 101 | 70.6[a] | 112 | 43.1[b] | **0.000*** |
| Sometimes/Never[(AR=3.2)] | 75 | 36.6 [a] | 44 | 22.2 [b] | | 105 | 40.2 [a] | 14 | 9.9[b] | | 35 | 23.6 | 84 | 32.9 | 0.143 | 21 | 14.7[a] | 98 | 37.7[b] | |

**Table 3:** Comparison of internet use during pregnancy according to sociodemographic characteristics (continue)

| **Rate of using the internet during pregnancy compared to the pre-pregnancy period** | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| More | 135 | 65.9[a] | 127 | 64.1[a] | 11.743 | 156 | 59.8[a] | 106 | 74.6[b] | 13.389 | 28 | 18.9[a] | 28 | 11.0[b] | 10.27 | 93 | 65.0 | 169 | 65.0 | 1.435 |
| Less[(AR=3.2)] | 13 | 6.3[a] | 1 | 0.5[b] | **0.003** | 14 | 5.4[a] | 0 | .0[b] | | 92 | 62.2[a] | 128 | 50.2[b] | **0.05** | 7 | 4.9 | 7 | 2.7 | |
| No change | 57 | 27.8[a] | 70 | 35.4[a] | | 91 | 34.9[a] | 36 | 25.4[b] | **0.001** | 28 | 18.9[a] | 99 | 38.8[b] | | 43 | 30.1 | 84 | 32.3 | 0.488 |
| **Status of trusting information accessed on the internet** | | | | | | | | | | | | | | | | | | | | |
| Always | 26 | 12.7 | 30 | 15.2 | 4.325 | 42 | 16.1[a] | 14 | 9.9[a] | 23.896 | 28 | 18.9[a] | 28 | 11.0[b] | 20.027 | 28 | 19.6 [a] | 28 | 10.8[b] | 31.000 |
| Usually | 115 | 56.1 | 105 | 53.0 | 0.228 | 120 | 46.0[a] | 100 | 70.4[b] | **0.000** | 92 | 62.2[a] | 128 | 50.2[b] | **0.000** | 94 | 65.7 [a] | 126 | 48.5[b] | **0.000*** |
| Never/Partly | 64 | 31.2 | 63 | 31.8 | | 99 | 37.9[a] | 28 | 19.7[b] | | 28 | 18.9[a] | 99 | 38.8[b] | | 21 | 14.7 [a] | 106 | 39.8[b] | |
| **Verifying information received from a health professional on the internet** | | | | | | | | | | | | | | | | | | | | |
| Yes | 77 | 37.6 | 66 | 33.3 | 0.786 0.405 | 85 | 32.6 | 58 | 40.8 | 2.753 | 57 | 38.5 | 86 | 33.7 | 0.938 0.333 | 58 | 40.6 | 85 | 32.7 | 2.494 |
| No | 128 | 62.4 | 132 | 66.7 | | 176 | 67.4 | 84 | 59.2 | 0.097 | 91 | 61.5 | 169 | 66.3 | | 85 | 59.4 | 175 | 67.3 | 0.114 |
| **Effect of the internet on the decision about the mode of delivery** | | | | | | | | | | | | | | | | | | | | |
| Vaginal | 178 | 86.8 | 120 | 60.6 | 35.949 **0.000** | 198 | 75.9 | 100 | 70.4 | 1.412 | 99 | 66.9 | 199 | 78.0 | 6.040 | 101 | 70.6 | 197 | 75.8 | 1.265 |
| Cesarean | 27 | 13.2 | 78 | 39.4 | | 63 | 24.1 | 42 | 29.6 | 0.235 | 49 | 33.1 | 56 | 22.0 | 0.014 | 42 | 29.4 | 63 | 24.2 | 0.261 |

* For each row, there is no difference between the columns with the same letters and there is a difference between the columns with different letters and the significance arises from the difference in that row. AR value shows the level of statistical significance (AR=Adjusted residual)
** More than one option is marked.

In Table 4, there was a statistically significant difference between primigravida and multigravida pregnant women in terms of the need for information-seeking according to trimesters, the time spent on the internet to get information, the rate of using the internet during pregnancy compared to the pre-pregnancy period, the contribution of the internet compared to other types of social support, the status of trusting the information accessed on the internet, and the effect of the internet on the decision about the mode of delivery ($p<0.05$). A statistically significant difference was found between pregnant women with a gestational week of 33 and below and those with a gestational week of 33 and above in terms of the need for information-seeking according to trimesters, the time spent on the internet to get information, the status of accessing information, the rate of using the internet during pregnancy compared to the pre-pregnancy period, the status of trusting the information accessed on the internet, and the effect of the internet on the decision about the mode of delivery ($p<0.05$). There was a statistically significant difference between pregnant women who received prenatal health care services and those who did not receive in terms of the need for information-seeking according to trimesters,

the time spent on the internet to get information, the status of accessing information, the rate of using the internet during pregnancy compared to the pre-pregnancy period, the status of trusting the information accessed on the internet, the status of verifying information received from a health professional on the internet, and the effect of the internet on the decision about the mode of delivery ($p<0.05$). A statistically significant difference was found between pregnant women who had planned pregnancy and those who had an unplanned pregnancy in terms of the reason for using the internet to get information, the time spent on the internet to get information, and the status of trusting the information accessed on the internet ($p<0.05$).

**Table 4:** Comparison of internet use during pregnancy according to obstetric characteristics

| | Number of pregnancies | | | | $\chi^2$ p | Gestational week | | | | $\chi^2$ p | Status of receiving prenatal health care | | | | $\chi^2$ p | Status of having a planned pregnancy | | | | $\chi^2$ p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Primigravida | | Multigravida | | | ≤33 weeks | | >33 weeks | | | Yes | | No | | | Yes | | No | | |
| | n | % | n | % | | n | % | n | % | | n | % | n | % | | n | % | n | % | |
| ****Reasons for using the internet to access information** | | | | | | | | | | | | | | | | | | | | |
| Finding information anonymously | 42 | 40.0 | 263 | 38.6 | 3.959 | 171 | 38.7 | 134 | 39.0 | 6.557 | 120 | 38.7 | 185 | 38.9 | 6.049 | 214 | 41.2[a] | 91 | 34.2[a] | 19.263 |
| 24/7, fast and easy access to the internet | 49 | 46.7 | 291 | 42.7 | | 179 | 40.5 | 161 | 46.8 | | 127 | 41.0 | 213 | 44.7 | | 235 | 45.2[a] | 105 | 39.5[a] | |
| Possibility to interact with health professionals on the internet | 7 | 6.7 | 91 | 13.4 | 0.266 | 63 | 14.3 | 35 | 10.2 | 0.087 | 49 | 15.8 | 49 | 10.3 | 0.109 | 49 | 9.4[a] | 49 | 18.4[b] | **0.000*** |
| Neutral and safe | 7 | 6.7 | 36 | 5.3 | | 29 | 6.6 | 14 | 4.1 | | 14 | 4.5 | 29 | 6.1 | | 22 | 4.2[a] | 21 | 7.9[b] | |
| ****Need for information-seeking** | | | | | | | | | | | | | | | | | | | | |
| In the first trimester[(AR=2.1)] | 35 | 50.0[a] | 150 | 36.6[b] | 34.932 | 108 | 46.8[a] | 77 | 30.9[b] | 54.571 | 92 | 52.3[a] | 93 | 30.6[b] | 22.691 | 129 | 38.7 | 56 | 38.1 | 3.548 |
| In the second trimester | 7 | 10.0[a] | 42 | 10.2[a] | | 15 | 6.5[a] | 34 | 13.7[b] | | 14 | 8.0[a] | 35 | 11.5[a] | | 35 | 10.5 | 14 | 9.5 | |
| In the third trimester[(AR=5.6)] | 0 | .0[a] | 133 | 32.4[b] | **0.000*** | 34 | 14.7[a] | 99 | 39.8[b] | **0.000*** | 35 | 19.9[a] | 98 | 32.2[b] | **0.000*** | 98 | 29.4 | 35 | 23.8 | 0.315 |
| Throughout pregnancy[(AR=3.5)] | 28 | 40.0[a] | 85 | 20.7[b] | | 74 | 32.0[a] | 39 | 15.7[b] | | 35 | 19.9[a] | 78 | 25.7[a] | | 71 | 21.3 | 42 | 28.6 | |
| **Time spent on the internet to get information** | | | | | | | | | | | | | | | | | | | | |
| Less than one hour/day[(AR=5.0)] | 0 | .0[a] | 113 | 32.6[b] | 43.658 | 26 | 12.6[a] | 87 | 44.2[b] | 56.881 | 14 | 9.9[a] | 99 | 37.8[b] | 37.762 | 85 | 30.7[a] | 28 | 22.2[a] | 21.166 |
| One hour/day[(AR=2.2)] | 7 | 12.5[a] | 91 | 26.2[b] | | 50 | 24.3[a] | 48 | 24.4[a] | | 49 | 34.8[a] | 49 | 18.7[b] | | 49 | 17.7[a] | 49 | 38.9[b] | |
| Two hours or more/day[(AR=6.4)] | 49 | 87.5[a] | 143 | 41.2[b] | **0.000*** | 130 | 63.1[a] | 62 | 31.5[b] | **0.000*** | 78 | 55.3[a] | 114 | 43.5[b] | **0.000*** | 143 | 51.6[a] | 49 | 38.9[b] | **0.000*** |
| **Status of accessing the information about pregnancy sought on the internet** | | | | | | | | | | | | | | | | | | | | |
| Always | 7 | 12.5 | 64 | 18.4 | 2.564 | 37 | 18.0[a] | 34 | 17.3[a] | 9.694 | 14 | 9.9[a] | 57 | 21.8[b] | 26.511 | 43 | 15.5 | 28 | 22.2 | 2.679 |
| Usually | 35 | 62.5 | 178 | 51.3 | | 122 | 59.2[a] | 91 | 46.2[b] | **0.008** | 99 | 70.2[a] | 114 | 43.5[b] | | 150 | 54.2 | 63 | 50.0 | 0.262 |
| Sometimes/Never | 14 | 25.0 | 105 | 30.3 | 0.278 | 47 | 22.8[a] | 72 | 36.5[b] | | 28 | 19.9[a] | 91 | 34.7[b] | **0.000*** | 84 | 30.3 | 35 | 27.8 | |

**Table 4:** Comparison of internet use during pregnancy according to obstetric characteristics (continue)

| Variables | Number of pregnancies | | | | $\chi^2$ p | Gestational week | | | | $\chi^2$ p | Status of receiving prenatal health care | | | | $\chi^2$ p | Status of having a planned pregnancy | | | | $\chi^2$ p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Primigravida | | Multigravida | | | ≤33 weeks | | >33 weeks | | | Yes | | No | | | Yes | | No | | |
| | n | % | n | % | | n | % | n | % | | n | % | n | % | | n | % | n | % | |
| **Rate of using the internet during pregnancy compared to the pre-pregnancy period** | | | | | | | | | | | | | | | | | | | | |
| | 49 | 87.5[a] | 213 | 61.4[b] | 14.779 | 136 | 66.0[a] | 126 | 64.0[a] | 15.519 | 99 | 70.2[a] | 163 | 62.2[a] | 8.642 | 185 | 66.8 | 77 | 61.1 | 2.908 |
| Less | 0 | .0[a] | 14 | 4.0[a] | **0.0001*** | 0 | .0[a] | 14 | 7.1[b] | **0.000*** | 0 | .0[a] | 14 | 5.3[b] | **0.013*** | 7 | 2.5 | 7 | 5.6 | 0.234 |
| No change[(AR=3.3)] | 7 | 12.5[a] | 120 | 34.6[b] | | 70 | 34.0[a] | 57 | 28.9[a] | | 42 | 29.8[a] | 85 | 32.4[a] | | 85 | 30.7 | 42 | 33.3 | |
| **Contribution of the internet compared to other types of social support (such as family, relatives, and friends)** | | | | | | | | | | | | | | | | | | | | |
| Better | 56 | 100.0 | 304 | 87.6 | 7.76 **0.005** | 186 | 90.3 | 174 | 88.3 | 0.409 0.523 | 134 | 95 | 226 | 86.3 | 7.407 **0.006** | 248 | 89.5 | 112 | 88.9 | 0.037 0.847 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worse | 0 | .0 | 43 | 12.4 | | 20 | 9.7 | 23 | 11.7 | | 7 | 5 | 36 | 13.7 | | 29 | 10.5 | 14 | 11.1 | |
| **Status of trusting information accessed on the internet** | | | | | | | | | | | | | | | | | | | | |
| Always(AR=2.6) | 14 | 25.0[a] | 42 | 12.1[b] | 31.229 | 35 | 17.0[a] | 21 | 10.7[a] | 54.723 | 21 | 14.9[a] | 35 | 13.4[a] | 15.601 | 42 | 15.2[a] | 14 | 11.1[a] | 17.898 |
| Usually(AR=3.3) | 42 | 75.0[a] | 178 | 51.3[b] | **0.000** | 140 | 68.0[a] | 80 | 40.6[b] | **0.000*** | 92 | 65.2[a] | 128 | 48.9[b] | **0.001*** | 157 | 56.7[a] | 63 | 50.0[a] | **0.000*** |
| Never/Partially(AR=5.5) | 0 | .0[a] | 127 | 36.6[b] | | 31 | 15.0[a] | 96 | 48.8[b] | | 28 | 19.9[a] | 99 | 37.8[b] | | 78 | 28.2[a] | 49 | 38.9[b] | |
| **Verifying information received from a health professional on the internet** | | | | | | | | | | | | | | | | | | | | |
| Yes | 14 | 25.0 | 129 | 37.2 | 3.123<br>0.077 | 73 | 35.4 | 70 | 35.5 | 0.000<br>0.984 | 35 | 24.8 | 108 | 41.2 | 10.768<br>**0.001*** | 101 | 36.5 | 42 | 33.3 | 0.370<br>0.543 |
| No | 42 | 75.0 | 218 | 62.8 | | 133 | 64.6 | 127 | 64.5 | | 106 | 75.2 | 154 | 58.8 | | 176 | 63.5 | 84 | 66.7 | |
| **Effect of the internet on the decision about the mode of delivery** | | | | | | | | | | | | | | | | | | | | |
| Vaginal | 49 | 87.5 | 249 | 71.8 | 6.202<br>**0.013** | 140 | 68.0 | 158 | 80.2 | 7.833<br>0.005* | 92 | 65.2 | 206 | 78.6 | 8.515<br>**0.004*** | 114 | 80.3 | 184 | 70.5 | 4.569<br>0.033 |
| Cesarean | 7 | 12.5 | 98 | 28.2 | | 66 | 32.0 | 39 | 19.8 | | 49 | 34.8 | 56 | 21.4 | | 28 | 19.7 | 77 | 29.5 | |

## 4. DISCUSSION

In the research conducted to determine internet use among pregnant women, it was determined that pregnant women used the internet mostly (%43.3) due to 24/7, fast, and easy access to get information. In studies in the literature, which have reported similar findings to our research findings, it has been reported that pregnant women used the internet to get extra information in addition to the information given by health professionals (52-92.8%), quickly and easily access information (68.4-83.8%), receive help in making decisions about pregnancy (62-75.5%), share experience (67.8%), and obtain social support (43.7%) (Lagan et al., 2010, pp. 106–115; Kamali et al., 2017, pp. 24-37; Jacobs et al., 2019, pp. 9-14; Wexler et al., 2020). It was determined that the pregnant women participating in the study needed to seek information mostly during the first trimester of pregnancy. Likewise, it has been reported in studies that pregnant women sought information on the internet more in the first trimester of pregnancy (Bert et al., 2013, pp. 1013-1018; Gao et al., 2013, pp. 730–735; Jacobs et al., 2019, pp. 9-14). The first trimester refers to the process in which women adapt to the new condition and are affected by many psychological and physiological factors, it is expected that they will use the internet more (Arslan et al., 2019).

In our study, it was found that the most common topics that pregnant women searched for on the internet were developing a healthy lifestyle and fetal development. In other studies in the literature, the most commonly searched topics have been reported as fetal development (23.8-87.6%), physiological changes during pregnancy (71%), physical activity during pregnancy (3.4-33.9%), nutrition (14,6-78.5%), pregnancy complications (32.3-61.6%), pregnancy follow-ups and test results (7.6-37.4%), drug use during pregnancy (49.3%), sexuality during pregnancy (21.5%), labor (39.3-53.2%), mode of delivery (47.2%), birth stages (23.8-92.8%), postpartum period and newborn care (6.2-43.%6) (Huberty et al., 2013, pp. 1363–1372; Bjelke et al., 2016, pp. 187–191; Lupton, 2016, pp. 171; Narasimhulu et al., 2016; Anasi and Allison, 2018; Baker and Yang, 2018, pp. 31-34; Jacobs et al., 2019, pp. 9-14; Zhu et al., 2019, pp. 1-12; Wexler et al., 2020; Koyun and Erbektaş, 2018; Batman, 2018;).

In our study, it was found that 94.8% of pregnant women were not orientated to reliable internet resources by health workers. In other studies with similar findings, it has been stated that pregnant women who had problems accessing reliable information on the internet wanted to be orientated by health professionals to websites including reliable pregnancy-related information, desired health professionals to provide more information during prenatal follow-ups and to receive online support for potential problems (Jacobs et al., 2019, pp. 9-14; Batman,

2018; Camacho-Morell, Esparcia, 2020). In their study, Chan and Chen (2019) stated that it is of great importance for health professionals to examine the media literacy skills of pregnant women who are seeking health information on the internet and evaluate effective internet use and emphasized the importance of all kinds of educational interventions that will improve the skills regarding finding, reading, understanding, interpreting, evaluating, and sharing pregnancy-related information.

Pregnant women in the age group of 28 and below were found to need more information in the first and second trimesters compared to pregnant women aged over 28 whereas the need for information-seeking was found to be higher in the third trimester among the pregnant women aged 28 and over. Studies have reported that young pregnant women spend more time on the internet (Fleming, Vandermause and Shaw, 2014; Lee and Moon, 2016; Lee and Moon, 2016; Hadımlı, Demirelöz Akyüz and Tuna Oran, 2018). It was seen that pregnant women with a high school degree or lower levels spent less than one hour on the internet whereas pregnant women with a university and above levels spent two hours or more on the internet. It was determined that pregnant women with an university and above or high school and below used the internet more during pregnancy compared to those with a high school and below levels. In studies supporting our research findings, it has been stated that there was a correlation between education level and internet use (Kavlak et al., 2012; Sayakhot and Carolan-Olah, 2016, pp. 61; Öztürk Güneş et al., 2020, pp. 210-220; Bayrak and Kanbur, 2022).

It was established that employed pregnant women spent more time on the internet than pregnant women who were unemployed, that they positively evaluated the effect of the internet on pregnancy, that they used the internet more compared to the pre-pregnancy period, and that they interpreted the contribution of the internet as better than other types of social support. Likewise, in the study conducted by Kavlak et al. (2012), it was detected that working pregnant women spent more time on the internet than non-working women. It is expected that working pregnant women do not have enough time to reach healthcare centers and health professionals, know how to investigate for information on the internet, try to meet the lack of information from the internet, and as a result spend more time on the internet with easy access. It was found that pregnant women who had an income more than their expenses spent more time on the internet, usually accessed the information they searched for on the internet, and positively interpreted the effect of the internet on pregnancy compared to the pregnant women who had an income equal to or less than their expenses. In the study administered by Sis Çelik and Aksoy Derya (2019), it was reported that internet use among pregnant women with a high income level was more common.

It was determined that primigravidas needed more information in the first trimester of pregnancy compared to multigravidas and that multigravidas needed more information in the third trimester of pregnancy. It was found that primigravidas spent more time on the internet than multigravidas, positively interpreted the effect of the internet on pregnancy, used the internet more compared to the pre-pregnancy period, interpreted the contribution of the internet as better compared to other types of social support, confidential in the information they accessed on the internet more, and tended to vaginal delivery. In some studies supporting our study, it has been defined that the number of pregnancies affects the time spent on the internet and that nulliparous women spend more time on the internet than multiparous women (Kavlak et al., 2012; Fleming, Vandermause and Shaw, 2014; Jacobs et al., 2019, pp. 9-14; Bayrak and Kanbur, 2022).

In the research conducted by Kamali et al. (2017), it was reported that the number of pregnancies is effective in internet use. The fact that primigravida pregnant women face this

new process for the first time in their lives may prompt them to seek information constantly. It was observed that pregnant women with a gestational week of 33 and less trusted the information they accessed on the internet more, positively evaluated the effect of the internet on pregnancy, and confidential the information they accessed on the internet more. Studies have demonstrated that women most frequently search for information on the internet in the early weeks of pregnancy (Bert et al., 2013, pp. 1013-1018; Gao et al., 2013, pp. 730–735; Jacobs et al., 2019, pp. 9-14; Öztürk Güneş et al., 2020, pp. 210-220). It was determined that pregnant women who received prenatal health care services spent more time on the internet, usually trusted the information they accessed on the internet, used the internet more compared to the pre-pregnancy period, interpreted the contribution of the internet as better compared to other types of social support, and trusted the information they accessed on the internet more. It was seen that pregnant women who had a planned pregnancy spent more time on the internet than those who had an unplanned pregnancy and that they partially or never trusted the information they accessed on the internet. It was also seen that pregnant women who had an unplanned pregnancy used the internet mostly to communicate with health professionals. Studies have reported that pregnant women who desired a planned pregnancy used the internet more frequently (Öztürk Güneş et al., 2020, pp. 210-220; Bayrak and Kanbur, 2022).

**Limitations**

The study has some limitations:

Since the pregnant women included in the research were determined using the random sampling method, the results of the study comprise only the women included in the sample. Due to the cross-sectional design of the study, the data obtained may change over time. Since the survey used for data collection was applied using the face-to-face meeting technique, the reliability of the data is limited to the accuracy of the information indicated by the pregnant women and cannot be generalized to all pregnant women.

**Conflict of interest**

There is no conflict of interest between the authors.

**Data availability statement**

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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There is no disagreement of interest between the authors.

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