ORIGINAL RESEARCH ARTICLE

Effects of decision-making in pregnancy via the internet on self-care agency and prenatal attachment

DOI: 10.29063/ajrh2025/v29i12.10

Mevhibe Çoban[*] and Esra Güney

Department of Midwifery, Faculty of Health Sciences, İnönü University, 44280, Malatya, Türkiye

***For Correspondence:** Email: *hlf2360288492022@163.com*

Abstract

The study was conducted to determine the effect of making decisions over the internet during pregnancy on self-care skills and prenatal attachment. The study was conducted in Türkiye between January and May 2024. It was determined that the difference between the pregnant women's Scale of Decision-Making Via The Internet In Pregnancy (DMIP) score averages and their ability to obtain information about age, education level, number of pregnancies, pregnancy, birth and postpartum period; between the Prenatal Attachment Inventory (PAI) score averages and their ability to obtain information about age, education level, employment status, family type, number of pregnancies, pregnancy, birth and postpartum period; and between the Self-Care Agency Scale (SCAS) score averages and their education level and number of pregnancies were statistically significant ($p<0.05$). It has been determined that the prenatal attachment and self-care levels of pregnant women who make decisions via the internet increase depending on their age, education level, employment status and number of children. According to study, midwives should constantly communicate with the woman during pregnancy, childbirth, and the postpartum period and have sufficient capacity and sensitivity in terms of providing her with information based on her needs. *(Afr J Reprod Health 2025; 29 [12]: 104-114).*

Keywords: Midwife, pregnant, ınternet, prenatal attachment, self-care

Résumé

L'étude a été menée afin de déterminer l'effet de la prise de décision par Internet pendant la grossesse sur les compétences d'autosoins et l'attachement prénatal. Elle a été réalisée en Turquie entre janvier et mai 2024. Il a été constaté que la différence entre les moyennes des scores de l'Échelle de Prise de Décision via Internet pendant la Grossesse (DMIP) et la capacité des femmes enceintes à obtenir des informations selon l'âge, le niveau d'éducation, le nombre de grossesses, ainsi que sur la grossesse, l'accouchement et la période postnatale, était statistiquement significative ($p<0,05$). De même, des différences significatives ont été observées entre les moyennes des scores de l'Inventaire d'Attachement Prénatal (PAI) et la capacité à obtenir des informations selon l'âge, le niveau d'éducation, la situation professionnelle, le type de famille, le nombre de grossesses, la grossesse, l'accouchement et la période postnatale ; ainsi qu'entre les moyennes des scores de l'Échelle d'Agence d'Autosoins (SCAS) et le niveau d'éducation et le nombre de grossesses ($p<0,05$). Il a été déterminé que les niveaux d'attachement prénatal et d'autosoins des femmes enceintes prenant des décisions via Internet augmentent en fonction de leur âge, de leur niveau d'éducation, de leur situation professionnelle et du nombre d'enfants. Selon l'étude, les sages-femmes devraient maintenir une communication constante avec la femme pendant la grossesse, l'accouchement et la période postnatale, et posséder des compétences et une sensibilité suffisantes pour lui fournir des informations adaptées à ses besoins. *(Afr J Reprod Health 2025; 29 [12]: 104-114).*

Mots-clés: : Sage-femme, femme enceinte, internet, attachement prénatal, autosoins

Introduction

With the increase in technological developments in recent years, internet usage rates have also increased. As opportunities to access the internet have become prevalent, individuals have started to meet their information needs via the internet. In particular, the popularization of social media platforms and the sharing of content about the life experiences of individuals on these platforms increase the curiosity of individuals and encourage them to use these platforms to meet their information needs.[1] According to 2023 data of Turkish Statistical Institute, the internet penetration

rate in Türkiye in 2023 was 95.5%. While the internet usage rate of individuals between the ages of 16 and 74 was 87.1%, the most frequently used social media and messaging applications were WhatsApp (84.9%), YouTube (69.0%), and Instagram (61.4%).[2]

Internet usage has also become widespread among pregnant women with the increase in the conveniences provided by internet access and the life experiences shared on social media platforms.[3,4] It is especially common for a pregnant woman to do research about her health and that of her baby before and after pregnancy follow-up visits.[5] While the need of pregnant women for information about their pregnancy continues throughout their pregnancy period, the period in which the need for information peaks is the period when medical follow-ups and prenatal diagnostic tests are performed. Although pregnancy is a natural physiological process, medical follow-ups and prenatal diagnostic tests at this stage lead to anxiety and stress in pregnant women.[6] Anxiety and stress raise the need of the pregnant woman for information by triggering her feelings of curiosity. Due to her increased need for information, a pregnant woman may spend most of her time searching for information about pregnancy on the internet. The reasons for pregnant women to turn to the internet to meet their information needs include the fact that the duration and frequency of pregnancy follow-ups are usually limited.[5]

Self-care is the capacity of a person to cope with illness and disability with or without the support of healthcare workers. Pregnancy is also a period during which self-care behaviors are important. The self-care behaviors emerging by the onset of pregnancy increase as the pregnancy progresses.[7] This increase may be explained by the pregnant woman starting to feel the movements of the fetus as her pregnancy progresses. In this stage, the pregnant woman focuses on the needs of her baby and accepts the existence of her baby. With the acceptance of pregnancy, the communication between the fetus and the mother intensifies. With the intensification of communication, prenatal attachment develops.[8] Prenatal attachment is facilitated as the parent names the child, interacts with the fetus, talks to the fetus, rubs the pregnant belly, develops healthy lifestyle behaviors before the delivery, and achieves physical concentration.[9,10]

Although studies examining the effects of making decisions via the internet during pregnancy on self-care agency and prenatal attachment are not available in the literature yet, some studies have revealed that pregnant women seek information on the internet for reasons such as their inability to obtain satisfactory information from healthcare workers or their experience of communication problems. In the background, there is a conceptual gap between what pregnant women expect to experience during pregnancy—often shaped by idealized or curated online content—and the medical realities they face in clinical settings. This discrepancy may lead to unmet expectations, confusion, or dissatisfaction with professional care. When the digital information environment becomes a primary reference point for decision-making, it can reshape a woman's health behaviors, her emotional attachment to the pregnancy, and her perceived self-efficacy. Therefore, understanding this gap and its effects is essential for improving antenatal care delivery in a digital era. For these reasons, the effects of making decisions via the internet during pregnancy on self-care agency and prenatal attachment should be defined. This study is original in that it focuses on the direct impact of online decision-making during pregnancy on two critical psychosocial outcomes—self-care agency and prenatal attachment—which have not yet been explored together in the literature. By identifying these effects, the study aims to contribute to the development of more responsive and digital-friendly antenatal care strategies that better meet the needs of pregnant women. This study aimed to determine the effects of decision-making via the internet in pregnancy on self-care agency and prenatal attachment. Answers to the following research questions were sought in this study:

1) Does making decisions via the internet in pregnancy affect self-care agency?
2) Does making decisions via the internet in pregnancy affect prenatal attachment?
3) Is there a relationship between self-care agency during pregnancy and prenatal attachment?
4) Does online decision-making impact self-care agency and prenatal attachment?

Methods

This cross-sectional study was carried out at the NST outpatient clinic of a hospital in an eastern province of Türkiye between 1 January and 1 May 2024. The sample size required for the study was calculated using OpenEpi version 3.01. With a 5% margin of error, in a 95% confidence interval with two-tailed significance, and for an 80% power to represent the population, the minimum required sample size was calculated as 356 participants. Participant who met the inclusion criteria and agreed to participate in the study were selected using purposive (non-probability) sampling.

Inclusion criteria:

- Being in the 32nd week of pregnancy or further along,
- Not having any communication problems,
- Not having any psychiatric diagnosis,
- Not having any health problems related to oneself or one's baby.

Exclusion criteria:

- Being illiterate,
- Not living in a physical environment suitable for internet access,
- Not possessing devices with access to the internet.

Data collection

Participant who met the inclusion criteria of the study and agreed to participate in the study were given information about the purpose and methodology of the study, and their written consent was obtained. The data collection forms were administered to women who presented to the NST outpatient clinic of Malatya Research and Training Hospital and were at least in the 32nd week of their pregnancies. The data collection forms were filled out face-to-face and in one sitting, and it took each participant approximately 10 min to fill out the forms.

Data collection instruments

A Personal Information Form, the Scale of Decision-Making via the Internet in Pregnancy, the Prenatal Attachment Inventory, and the Self-Care Agency Scale were used to collect data.

Personal information form (PIF)

This form included questions on sociodemographic characteristics (e.g., age, education level, working status, income level) and obstetric characteristics (e.g., number of pregnancies, gestational week, obstetric history) of the participants.[5,9,11]

Scale of decision-making via the internet in pregnancy (DMIP)

DMIP was developed by Koyun and Erbektaş (2018) to measure the effects of the internet on decisions made regarding pregnancy-related issues. It is a 10-item scale with two dimensions: "self-efficacy perceptions" and "sense of control" It is a 5-point Likert-type scale. The minimum and maximum total scores on the scale are 10 and 50. The scale does not have a cut-off point. Higher scores are assumed to indicate a stronger influence of the internet on decision-making. Cronbach's alpha internal consistency coefficient for the scale was found to be 0.85 in the study in which it was developed.[11] In this study, this coefficient was calculated as 0.87.

Prenatal attachment inventory (PAI)

PAI was developed by Muller (1993) and tested for validity and reliability in Turkish by Yılmaz and Beji, who reported its internal consistency coefficient as 0.84. The scale, which was developed to determine the thoughts, feelings, and situations experienced by women throughout pregnancy and their levels of attachment in the prenatal period, consists of 21 items. It is a 4-point Likert-type scale. The score range of the scale is 21-84, and higher scores are considered to indicate higher levels of prenatal attachment.[12] In this study, Cronbach's alpha coefficient for PAI was found to be 0.85.

Self-care agency scale (SCAS)

SCAS, which was developed by Kearney and Fleischer (1979) to determine the self-care skills of individuals, was tested for validity and reliability in Turkish by Nahcivan (1993). The scale consists of

35 items. It is a 5-point Likert-type scale, scores vary in the range of 0-140. Higher scores are interpreted to indicate higher self-care agency. Cronbach's alpha coefficient for the scale was reported as 0.89 (Nahcivan, 1994).[13] In this study, this coefficient was found to be 0.81.

Statistical analysis

The SPSS 25.0 for Windows program (SPSS, Chicago, IL, USA) was used to analyze the collected data. Descriptive statistics are presented as frequency, percentage, mean, and standard deviation values. The intergroup comparisons of the categorical variables were carried out with chi-squared tests. For the variables satisfying parametric test conditions, two groups were compared using independent-samples t-tests, while three or more groups were compared using one-way analysis of variance (ANOVA). Tukey's test was used as a post hoc test to identify the sources of significant differences identified in the one-way ANOVA. Relationships between variables were tested using Person's correlation analysis. The level of statistical significance was accepted as $p<0.05$.

Ethical considerations

Before starting the study, ethical approval was received from the Non-Invasive Clinical Studies and Publications Ethics Committee of İnönü University (Decision No: 2023/4458), and institutional permission was obtained from the institution where the data would be collected (E-23536505-619-228969760). Prior to data collection, participants were informed about the purpose of the study. Each participant received detailed information regarding the study, and those who agreed to participate provided verbal and written consent. Participation in the study was based on the principle of voluntariness, and the study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical principles such as "Informed Consent," "Confidentiality and Data Protection," "Respect for Autonomy" (ensuring voluntary participation), and the general principles of "Non-Maleficence/Beneficence" were strictly adhered to. The data collected were used solely for the purposes of this research.

Results

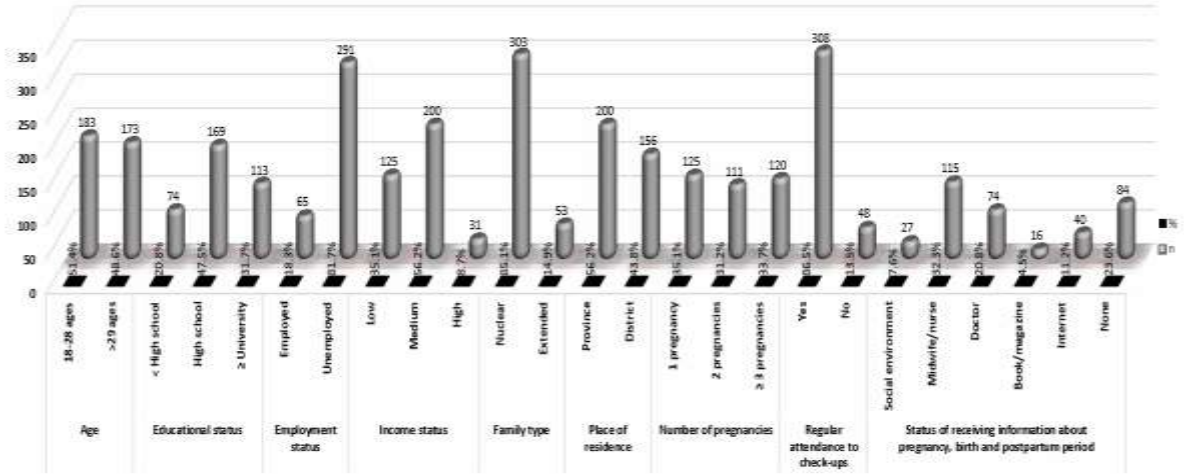
Some sociodemographic and obstetric characteristics of the participants are presented in Table 1. Accordingly, the mean age of the participants was 28.845±5.18, 47.5% of the participants were high school graduates, 81.7% were not working, the income levels of 56.2% were equivalent to their expense levels, 85.1% had nuclear families, 56.2% were living in the city, 35.1% had 1 pregnancy, 86.5% attended their pregnancy follow-ups regularly, 76.4% had received education about pregnancy, childbirth, and the postpartum period, and 32.3% had received this education from midwives/nurses (Graph 1).

The results of the comparisons of the mean total DMIP, SCAS, and PAI scores of the participants based on some sociodemographic characteristics are presented in Table 1. Accordingly, the participants who were in the 18-28 age group had significantly higher mean total DMIP and PAI scores ($p<0.05$). The participants with higher levels of education had higher mean total DMIP, SCAS, and PAI scores, and the participants with university or higher degrees had significantly higher mean total DMIP, SCAS, and PAI scores in comparison to others ($p<0.05$). Additionally, the participants who were working and those with nuclear families had significantly higher mean total PAI scores ($p<0.05$). Higher mean total DMIP, SCAS, and PAI scores were associated with lower numbers of pregnancies, and the highest mean scores were found among the participants who were having their first pregnancies, and the mean scores of these participants were significantly greater than the mean scores of others ($p<0.05$). Higher mean total DMIP and PAI scores were associated with having received education about pregnancy, childbirth, and the postpartum period, the participants who had received education or information regarding these issues from midwives/nurses and those who had received it from the internet had significantly greater mean total DMIP scores than others, and the participants who had received education and information regarding these issues from midwives/nurses had a significantly higher mean total PAI score than others ($p<0.05$) (Table 1).

Table 1: Comparisons of the DMIP, SCAS, and PAI scores of the participants based on sociodemographic characteristics (n=356)

Variables	n	DMIP	SCAS	PAI
Age			**Mean ± SD**	
18-28 ages	183	28.60±9.33	101.71±19.74	62.93±11.76
≥29 ages	173	26.19±10.42	97.69±20.04	59.53±13.22
Test ve p value*		t=2.294, **p=0.022**	t=1.904, p=0.058	t=2.56, **p=0.011**
Education status				
≤ High school [a]	74	24.85±9.97	93.16±21.59	59.31±14.40
High school [b]	169	26.27±9.59	99.54±20.53	60.21±12.44
≥University [c]	113	30.84±9.58	104.39±16.61	64.16±11.07
Test ve p value**		F=10.85, **p=0.000** a<b<c	F=7.35, **p=0.001** a<c	F=4.56, **p=0.011** a<b<c
Employment status				
Yes	65	29.10±9.65	102.98±19.28	63.83±9.91
No	291	12.95±5.05	99.03±20.07	60.71±13.06
Test ve p value*		t=1.509, p=0.132	t=1.443, p=0.150	t=2.151, **p=0.034**
Income status				
Low	125	27.47±9.40	97.87±21.24	61.92±12.12
Medium	200	27.45±10.01	101.16±19.38	60.73±12.71
High	31	27.12±11.69	98.29±18.12	62.22±13.86
Test ve p value**		F= 0.016, p=0.984	F= 1.139, p=0.321	F= 0.439, p=0.645
Family type				
Nuclear family	303	27.68±9.91	100.23±20.31	61.96±12.38
Extended family	53	25.98±10.03	97.01±17.73	57.39±13.21
Test ve p value*		t=1.151, p=0.250	t=1.083, p=0.279	t=2.453, **p=0.015**
Place of residence				
Province	200	28.28±10.19	99.67±20.30	62.37±12.37
District	156	26.33±9.51	99.87±19.58	59.88±12.77
Test ve p value*		t=1.845, p=0.066	t=-0.094, p=0.925	t=1.857, p=0.064
Number of pregnancy				
1 pregnancy[a]	125	29.54±9.36	101.81±19.32	63.20±11.16
2 pregnancies[b]	111	27.82±9.51	102.01±18.66	62.25±13.32
≥ 3 pregnancies[c]	120	24.85±10.38	95.52±21.32	58.39±12.89
Test ve p value**		F=7.180, **p=0.001** c<a	F=4.145, **p=0.017** c<a;c<b	F=5.050, **p=0.007** c<a
Regular attendance to check-ups				
Yes	308	27.87±10.37	100.07±19.61	61.73±12.37
No	48	24.54±8.81	97.75±22.17	58.37±13.69
Test ve p value*		t=2.176,**p=0.030**	t=0.749,p=0.454	t=1.725,p=0.085
Status of receiving information about pregnancy, birth and postpartum period				
Yes, social environment [a]	27	27.22±8.58	99.25±22.65	61.37±12.27
Yes, midwife/nurse [b]	115	29.06±10.18	101.77±19.03	63.88±11.67
Yes, doctor[c]	74	26.98±9.94	101.25±20.81	63.48±13.37
Yes, book, magazine[d]	16	30.37±10.51	95.00±24.30	63.18±9.95
Yes, ınternet[e]	40	30.82±10.00	100.65±19.49	61.67±12.62
No[f]	84	23.46±8.70	96.32±18.85	55.20±11.91
Test ve p value**		F=4.793, **p=0.000** f<b;f<e	F=1.017, p=0.407	F=5.799, **p=0.000** f<b;f<c

*p<0.05, * In independent groups t-test, **one-way ANOVA test, Post Hoc Scheffe test, DMIP: Scale of Decision-Making via the Internet in Pregnancy, PAI: Prenatal Attachment Inventory, SCAS: Self-Care Agency Scale*



Graph 1. Sociodemographic and Obstetric Characteristics of the Participants (n=356)

Table 2: Correlations between the DMIP, SCAS, and PAI scores of the participants (n=356)

Variables	DMIP		SCAS		PAI	
	r*	p**	r*	p**	r*	p**
DMIP	1	-				
SCAS	.244	**0.000**	1	-		
PAI	.346	**0.000**	.299	**0.000**	1	-

**Pearson Correlation Analysis, **p<0.01 (2-tailed), DMIP:Scale of Decision-Making via the Internet in Pregnancy, PAI: Prenatal Attachment Inventory, SCAS: Self-Care Agency Scale*

Table 3: Results of the regression analysis of the DMIP and PAI scores of the participants (n=356)

	B (%95 CI)	Beta	t	p	Zero-order	Partial
(Constant)	49.245 (45.619-52.875)		26.707	**0.000**		
DMIP	0.439 (0.315-0.563)	0.346	6.943	**0.000**	0.346	0.346

B= Unstandardized coefficient, Beta= Unstandardized coefficient, F=48.202, p=0.000, Adj. R^2= 0.117, SE=11.833

Table 4: Results of the regression analysis of the DMIP and SCAS scores of the participants (n=356)

	B (%95 CI)	Beta	t	p	Zero-order	Partial
(Constant)	86.316 (80.374-92.257)		28.572	**0.000**		
DMIP	0.490 (0.286-0.694)	0.244	4.732	**0.000**	0.244	0.244

B= Unstandardized coefficient, Beta= Unstandardized coefficient, F=22.391, p=0.000, Adj. R^2= 0.057, SE=19.388

The results of the correlation analyses between the DMIP, SCAS, and PAI scores of the participants are presented in Table 2. According to these results, DMIP scores had weak, positive, and statistically significant correlations with SCAS and PAI scores (p<0.001). The regression model formed to include the attitudes of the participants toward making decisions about pregnancy via the internet and their prenatal attachment levels was found to be significant (F=48.202, p=0.000). A 1-unit increase in the DMIP scores of the participants corresponded to a 0.43-unit increase in their PAI scores. It was

determined that attitudes toward making decisions about pregnancy via the internet explained 11.7% of the total variance in prenatal attachment levels.

The regression model formed to include the attitudes of the participants toward making decisions about pregnancy via the internet and their self-care agency levels was found to be significant (F=22.391, p=0.000). A 1-unit increase in the DMIP scores of the participants corresponded to a 0.49-unit increase in their SCAS scores. It was determined that attitudes toward making decisions about pregnancy via the internet explained 5.7% of the total variance in self-care agency levels.

Discussion

In this study, which was conducted to determine the effects of decision-making via the internet in pregnancy on the self-care agency and prenatal attachment levels of pregnant women, it was found that the attitudes of the participants toward making decisions via the internet during pregnancy were significantly related to their age, education level, number of pregnancies, status of attending pregnancy follow-ups regularly, and sources of information about pregnancy, childbirth, and the postpartum period (Table 1). Our findings underscore the growing importance of the internet as a decision-making tool during pregnancy, especially among younger and more educated women. This reflects a shift in how pregnant women seek and validate health information, which may influence prenatal care adherence and maternal empowerment. The literature review conducted for this study revealed some studies supporting the results of our study. In studies investigating the usage of the internet by pregnant women to obtain information about pregnancy and childbirth, higher rates of internet usage have been found in pregnant women in younger age groups.[3,14,15]

In a study investigating the behaviors of women looking for health-related information about pregnancy and childbirth on the internet, higher education levels were associated with higher rates of seeking health-related information on the internet.[16] In a systematic review that was conducted to determine how pregnant women used the internet to access information related to pregnancy, it was determined that primiparous pregnant women used the internet more frequently in comparison to multiparous pregnant women.[17] In another study, it was found that as the internet usage rates of women of reproductive age increased, the number of children they had and their fertility intentions decreased.[18] Recent evidence indicates that pregnant women's engagement with online health information is associated with increased attendance at regular prenatal check-ups.

A 2023 study conducted in Australia demonstrated that digital media use among pregnant women enhances their decision-making processes, facilitates experience sharing, and strengthens communication with healthcare professionals. This study provides contemporary support for the role of digital media in improving pregnant women's access to healthcare services and adherence to routine prenatal care[19]. Furthermore, a 2024 study reported that mobile health (mHealth) applications targeted at pregnant women effectively improved antenatal care attendance and increased the utilization of skilled birth attendance. These findings offer up-to-date evidence highlighting the potential of digital interventions to enhance healthcare accessibility and promote consistent engagement with prenatal health services among pregnant populations[20] In a study aiming to identify the reasons for which women used the internet, it was seen that 94% of women who used the internet used it to confirm the accuracy of the information provided by healthcare workers.[21]In addition to these findings, this study investigated the sources pregnant women used to obtain information about pregnancy, childbirth, and the postpartum period. It was observed that participants most frequently sought information from midwives, followed by the internet, physicians, and books. The reason for the participants to seek information from midwives was thought to be the adequacy and efficacy of the midwifery care that they received. The reasons for their usage of the internet as their second-most frequently used source could be the patient traffic during their hospital follow-ups and the limited time allocated to examinations.[22]

It was seen in this study that the self-care agency levels of the participants, measured by SCAS, were significantly related to their education levels and numbers of pregnancies (Table 1). Similarly, in studies conducted to evaluate the

quality of life and self-care skills of women in the pregnancy and postpartum periods, it was shown that self-care skills increased as education levels increased,[23,24] and pregnant women with higher education levels developed positive self-care behaviors.[25] In a study in which the relationship between the self-care agency of pregnant women and their health-related practices was investigated, lower numbers of pregnancies were associated with higher levels of self-care agency,[8] whereas another study similarly revealed that women with higher self-care agency scores were more likely to have fewer pregnancies.[26] The significant relationship between education level and self-care agency suggests that educational interventions targeting less educated pregnant women could enhance their self-care practices. This indicates a potential avenue for healthcare providers to tailor support and resources.In addition to these findings related to self-care agency, prenatal attachment levels of the participants were also examined and found to be associated with several demographic and psychosocial factors. In this study, the prenatal attachment levels of the participants were determined to be related to their age, education level, working status, family type, number of pregnancies, and sources of information about pregnancy, childbirth, and the postpartum period (Table 1). In the literature, there are studies with similar results to those found in our study. Studies carried out to identify the sociodemographic characteristics of pregnant women and the factors that affected mother-infant attachment demonstrated higher levels of prenatal attachment among younger mothers.[27,28] Bernad *et al*. identified an increase in prenatal attachment associated with higher education levels in their study on factors affecting prenatal attachment in the second and third trimesters[29]. Similarly, other studies examining prenatal attachment levels and influential factors reported that pregnant women who were employed exhibited higher prenatal attachment levels.[30,31] Additionally, research investigating the effects of maternal obesity found that pregnant women living in nuclear families had higher prenatal attachment rates.[32] Moreover, studies exploring the relationship between prenatal attachment and obstetric characteristics indicated that prenatal attachment tended to decrease as the number of pregnancies increased[33,34]

In this study, the DMIP scores of the participants had weak, positive, and statistically significant correlations with their PAI and SCAS scores (Table 2). Furthermore, there was a direct proportion between the DMIP scores of the participants and their PAI and SCAS scores (Tables 3 and 4). The results of some studies in the literature were in parallel with the result of our study. A significant relationship was identified between internet usage and prenatal attachment in a study examining the relationships between digital media usage during pregnancy, the psychological health of the mother, and mother-infant attachment.[35] The studies investigating the relationship between mother-infant attachment and self-care practices in pregnant women, an increase in self-care agency was seen as prenatal attachment increased.[36,37] Moreover, several recent studies have further supported these findings by demonstrating the positive effects of increased internet usage and digital interventions on pregnant women's self-care behaviors and prenatal attachment levels. Nguyen *et al*., who studied the self-care behaviors of pregnant women and the effects of these behaviors on their psychological well-being during pregnancy, stated that as the internet usage levels of the women increased, their self-care and prenatal attachment levels also increased.[38] Lee *et al*., who researched the effects of a mobile internet-based intervention in the improvement of the self-care practices of pregnant women, reported that pregnant women who accessed the internet on mobile devices had better self-care behaviors.[39]

Limitations and strengths

This study has several limitations. One of these is the failure to assess the long-term effects of internet use on pregnant women's self-care agency and prenatal attachment. Furthermore, the failure to precisely identify the source of the internet used by pregnant women. This failure to precisely identify the internet source leads to misinterpretation of the information obtained due to the diversity of information sources and the inability to adequately assess it. Another limitation of the study is that self-care agency and prenatal attachment are affected by

numerous social, cognitive, psychological, and emotional variables. Assessing a situation dependent on multiple variables through a single variable limits the interpretation of the research findings. Future research could examine each variable separately and over a longer period of time. Furthermore, by investigating the internet resources used by pregnant women, the long-term effects of internet use on self-care agency and prenatal attachment in pregnant women could be assessed.

This study has both limitations and strengths. One of these is the use of validated and reliable measurement tools during data collection. Furthermore, conducting a power analysis when determining the sample size increased statistical power. Another indicator that increased statistical power was the use of advanced analytical techniques in the interpretation of the study. Because the sample encompassed individuals with diverse demographic characteristics, the generalizability of the findings increased. Furthermore, given the increasing prevalence of internet use and ease of access to technology, the integration of online information into pregnancy demonstrates the strength of this study. In conclusion, this study provides robust evidence for the impact of online decision-making during pregnancy on self-care agency and prenatal attachment.

Conclusion and recommendations

In this study, which investigated the effects of decision-making via the internet during pregnancy on the self-care agency and prenatal attachment levels of pregnant women, a linear relationship was found between the attitudes of the participants toward decision-making via the internet during pregnancy and their self-care agency and prenatal attachment levels. According to these results, midwives should constantly communicate with the woman during pregnancy, childbirth, and the postpartum period and have sufficient capacity and sensitivity in terms of providing her with information based on her needs. Furthermore, the awareness of midwives regarding the extent to which information obtained from the internet influences the lives of women should be increased. Women should be informed about the reliability of the information available on the internet, and they should be assisted in obtaining accurate health-related information via the internet and using health-related applications.

Data availability

The author may provide access to the data used in this study upon reasonable request and if deemed appropriate.

Acknowledgement

This research was presented as an oral presentation at 10th International 14th National Midwifery Students Congress 16–18 May 2024 Tokat, Türkiye

Contribution of authors

M.Ç. conceived and designed the study. M.Ç. collected and curated the data. M.Ç. drafted the manuscript. E.G. supervised the study, validated the data, and reviewed and edited the manuscript. All authors read and approved the final version of the manuscript.

References

1. Kahraman A and Özbaşaran F. Virtual support, real nourishment: the role of social media in breastfeeding practice. Çekmece Journal of Social Sciences 2024;11(23): 92-103. doi: 10.55483/cekmece.1346548
2. TSI, DA. Household information technologies (IT) usage survey. 2022. https://data.tuik.gov.tr/Bulten/index?p=Hanehalki-Bilisim-Teknolojileri-(BT)-Kullanim-Arastirmasi-2022-45587
3. Al-Dahshan A, Chehab M, Mohamed A, Al-Kubaisi N and Selim N. Pattern of internet use for pregnancy-related information and its predictors among women visiting primary healthcare in Qatar: A cross-sectional study. BMC Pregnancy Childbirth 2021; 21:1-8. https://doi.org/10.1186/s12884021042270
4. Serçekuş P, Değirmenciler B and Özkan S. Internet use by pregnant women seeking childbirth information. J Gynecol Obstet Hum Reprod 2021; 50(8): 102144. https://doi.org/10.1016/j.jogoh.2021.102144
5. Bjelke M, Martinsson AK, Lendahls L and Oscarsson M. Internet as a source of information during pregnancy - A descriptive cross-sectional study in Sweden. Midwifery 2021; 40: 187-91. https://doi.org/10.1016/j.midw.2016.06.020
6. Baker B and Yang I. Social media as social support in

pregnancy and the postpartum. Sex Reprod Healthc 2018; 17: 31–4. https://doi.org/10.1016/j.srhc.2018.05.003
7. Baltacı N, Kaya N and Kılıçkaya İ. Investigation of E-Health Literacy and Healthy Lifestyle Behaviors of Pregnant Women. STED 2023; 32(4): 301-13. DOI: 10.17942/sted.1229364
8. Çelik AS and Derya YA. Determining the Self-Care Agency and the Health Practice Levels of the Pregnant Women and the Effective Factors. GUJHS 2019; 8(1): 111-19. https://dergipark.org.tr/en/download/article-file/682093
9. Dereli SY, Kızılkaya S and Beji N. Turkish Version of Prenatal Attachment Inventory: A Study of Reliability and Validity. Journal of Anatolia Nursing and Health Sciences 2013; 16(2): 103-09. https://dergipark.org.tr/en/download/article-file/29648
10. Aksoy EY, Dereli SY and Aslantekin F. Prenatal attachment and social support in risk pregnancies. Turkiye Klinikleri J Health 2016;1(3):163-69. http://dx.doi.org/10.5336/healthsci.2016-50668
11. Koyun A and Erbektaş G. Development of "decısıon makıng scale vıa ınternet on pregnancy" JACSD 2018; 12: 25-38. http://dx.doi.org/10.17367/JACSD.2018.1.6
12. Yılmaz S and Beji NK. Turkish Version of Prenatal Attachment Inventory: A Study of Reliability and Validity. Anadolu Journal of Nursing and Health Sciences 2013; 16(2): 103-09. https://dergipark.org.tr/en/download/article-file/29648
13. Nahcivan ÖN. Validity and reliability study: adaptation of the self-care agency scale to Turkish. West. J. Nurs. Res1994; 7: 109-19. DOI: 10.1177/0193945904267599
14. Ahmadian L, Khajouei R, Kamali S and Mirzaee M. Use of the Internet by pregnant women to seek information about pregnancy and childbirth. Inform Health Soc Care 2020; 45(4): 385-95. https://doi.org/10.1080/17538157.2020.1769106
15. Jacobs EJ, Van Steijn, ME and Van Pampus MG. Internet usage of women attempting pregnancy and pregnant women in the Netherlands. Sex Reprod Healthc 2019; 21: 9-14. https://doi.org/10.1016/j.srhc.2019.04.005
16. Conrad M. Health information-seeking internet behaviours among pregnant women: a narrative literature review. J Reprod Infant Psychol 2024; 42(2): 194-208. https://doi.org/10.1080/02646838.2022.2088711
17. Sayakhot P and Carolan-Olah M. Internet use by pregnant women seeking pregnancy-related information: a systematic review. BMC Pregnancy Childbirth 2016; 16: 1-10. DOI 10.1186/s12884-016-0856-5
18. Nie P, Peng X and Luo T. Internet use and fertility behavior among reproductive-age women in China. China Econ Rev 2023; 77: 101903. https://doi.org/10.1016/j.chieco.2022.101903
19. Hussain IM, Hartney, N. & Sweet LA survey of Australian women's digital media usage in pregnancy and labour and birth. *BMC Pregnancy Childbirth* **23**, 688 (2023). https://doi.org/10.1186/s12884-023-06003-8
20. Rahman M, Yamaji N, Nagamatsu Y, Ota E Effects of mHealth Interventions on Improving Antenatal Care Visits and Skilled Delivery Care in Low- and Middle-Income Countries: Systematic Review and Meta-analysi J Med Internet Res 2022;24(4):e34061 URL: https://www.jmir.org/2022/4/e34061 DOI: 10.2196/34061
21. Lagan BM, Sinclair M and George Kernohan W. Internet use in pregnancy informs women's decision making: a web-based survey. Birth 2010; 37(2):106-15. https://doi.org/10.1111/j.1523-536X.2010.00390.x
22. Grimes HA, Forster DA and Newton MS. Sources of information used by women during pregnancy to meet their information needs. Midwifery 2014; 30(1): 26-33. https://doi.org/10.1016/j.midw.2013.10.007
23. Özcan H, Şahan Ö, Gunay M and Şimşek H. Self-care agency in pregnancy. Clin Exp Health Sci 2024; 12(4): 787-92. DOI: 10.33808/clinexphealthsci.780534
24. Özdemir F, Öztürk A, Karabulutlu Ö and Tezel A. Determination of the life quality and self-care ability of the mothers in post-partum period. J Pak Med Assoc 2018; 68(2): 210-5.
25. Khazaeian S, Khazaeian S and Fathnezhad-Kazemi A. Association between awareness, perceived severity, and behavioral control of COVID-19 with self-care and anxiety in pregnancy: A cross-sectional study. Women Health 2022; 62(1): 55-67. https://doi.org/10.1080/03630242.2021.2014020
26. Yılmaz SD and Beji NK. Evaluation of self care agency in pregnancy. J. Gen. Med 2010; 20(4). https://acikerisim.selcuk.edu.tr/items/ab5e3011-57be-49c0-81c2-3fa01f13ac0f
27. Kapısız SG, Var EÇ and Duyan V. Relation Between the Characteristics of the Mother, The Gestation and The Prenatal Attachment. TJFMPC 2020; 14(4): 651-56. DOI: 10.21763/tjfmpc.739981
28. Branjerdporn G, Meredith P, Wilson T and Strong J. Prenatal predictors of maternal-infant attachment. Can J Occup Ther 2020; 87(4); 265-77. https://doi.org/10.1177/0008417420941781
29. Bernad BC, Mitrache D, Hogea L, Pașcalău A, Gavreliuc A, Craina M and Bernad E. Impact of the mother's mental health and socioeconomic status on prenatal attachment in a population-based sample of expectant romanian women. Clin Exp Obstet Gynecol 2024; 51(3): 59. DOI: 10.31083/j.ceog5103059
30. Elkin N. Levels of prenatal attachment in pregnant women and factors affecting ıt. STED 2015; 24: 230-36.
31. Sade G and Özkan H. The correlatıon between life satisfaction and prenatal attachment levels of pregnant women. Journal of General Medıcıne 2020; 30(4): 255-62.

https://dergipark.org.tr/en/download/article-file/2156554
32. Dikmen HA and Çankaya S. Effects of maternal obesıty on prenatal attachment. AUHSJ 2018; 2: 118-23. https://doi.org/10.31067/0.2018.1
33. Coşkun AM, Okcu G and Arslan S. The impact of distress experienced during pregnancy on prenatal attachment. Perınatal 2019; 27(2): 49-55. https://www.perinataldergi.com/Files/Archive/Covers/en-US/PJ-27-259.pdf#page=74
34. Canlı A and Demirtaş B. Prenatal attachment and the relationship with body self-perception. J Obstet Gynecol Neonatal Nurs 2022; 51(1): e1-e12. https://doi.org/10.1016/j.jogn.2021.09.003
35. Smith M, Mitchell AS, Townsend ML and Herbert JS. The relationship between digital media use during pregnancy, maternal psychological wellbeing, and maternal-fetal attachment. PLoS One 2020; 15(12): e0243898. https://doi.org/10.1371/journal.pone.0243898
36. Eltomy EH, Essa RM and Fathalla NF. Relationship between Maternal Fetal Attachment and Self-Care Practices among Pregnant Women. ASNJ 2020; 22(2):19-26. https://journals.ekb.eg/article_206110_27e147762af61ce3857a0a847831591a.pdf
37. Abiç A, Aksoy A and Yılmaz DV. The relationship between pregnant women's prenatal attachment levels and health practices during pregnancy. JGEHES 2022; 4(1): 21-8. https://dergipark.org.tr/en/download/article-file/1984053
38. Nguyen LD, Nguyen LH, Ninh LT, Nguyen HTT, Nguyen AD, Vu LG and Ho RC. Women's holistic self-care behaviors during pregnancy and associations with psychological well-being: implications for maternal care facilities. BMC Pregnancy Childbirth 2022; 22(1): 631. https://doi.org/10.1186/s12884-022-04961-z
39. Lee Y, Kim S and Choi S. Effectiveness of mobile-based intervention Self-care for Pregnant Women at Work: A randomized controlled trial. J Occup Health 2023; 65(1): e12402. https://doi.org/10.1002/1348-9585.12402