




The role of social networks in improving women's self-care during pregnancy and postpartum

Fatemeh Dinari¹, Roghayeh Ershad Sarabi¹, Esmat Mashouf², Khadijeh Moulaei^{3*}

¹Medical Informatics Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran

²Department of Health Information Technology, Varastegan Institute for Medical Sciences, Mashhad, Iran

³PhD Candidate of Medical Informatics, Student Research Committee, Kerman University of Medical Sciences, Kerman, Iran

Article Info

Article type:
Research

Article History:

Received: 2022-04-09

Accepted: 2022-05-20

Published: 2022-05-31

* Corresponding author:

Khadijeh Molaei

PhD Candidate of Medical Informatics, Student Research Committee, Kerman University of Medical Sciences, Kerman, Iran

Email: moulaei.kh91@gmail.com

Keywords:

Social Networks

Self-Care

Pregnancy

Postpartum

ABSTRACT

Introduction: Pregnant women are always faced with common physical and mental problems during pregnancy and postpartum. Self-care through social networks as an effective and influential factor in women's empowerment can improve their physical and mental health. The aim of this study was to investigate the role of social networks in improving women's self-care during pregnancy and postpartum.

Material and Methods: This cross-sectional study was conducted through a researcher-made questionnaire. We invited 285 pregnant women referred to Fasa medical centers (Shiraz, Iran). 110 pregnant women agreed to participate in the study. Finally, according to the inclusion and exclusion criteria, 96 pregnant women entered the study and completed the questionnaire. Data were analyzed using descriptive statistics (mean, standard deviation, percentage, frequency) and analysis of variance with SPSS 22.

Results: Among the 44 roles of social networks in the self-care processes during pregnancy and postpartum "regular use of drugs and supplements" (4.43±0.81), "timely and regular tests (screening, etc.), ultrasounds during pregnancy" (4.22±0.90) and "communication with a public health expert in health homes" (4.07±0.97) were the most important roles. "Management, control and improvement of foot edema" (1.71±1.01), "Management and control of complications due to iron deficiency" (1.97±1.11) and "Social support" (2.25±1.17) were the least important roles. There was significance relationship between education level, job, duration of membership in social networks and duration of use of social networks during the one day with demographic characteristics. There was no significant relationship between age and children at home with demographic characteristics of women.

Conclusion: Social networks as an important source of information can help to improve women's self-care processes during pregnancy and postpartum. Women during pregnancy and postpartum can easily find information about lifestyle, how to manage pregnancy side effects, manage psychological issues, and communicate with other pregnant women or treatment team by social networks.

Cite this paper as:

Dinari F, Ershad Sarabi R, Mashouf E, Moulaei K. The role of social networks in improving women's self-care during pregnancy and postpartum. *Front Health Inform.* 2022; 11: 116. DOI: [10.30699/fhi.v11i1.371](https://doi.org/10.30699/fhi.v11i1.371)

INTRODUCTION

Pregnancy, childbirth and postpartum, always come with challenges despite being one of the most important, sensitive and beautiful times for women [1, 2]. During these periods, pregnant women experience physical and psychological changes such as gestational diabetes [3] blood pressure [4] nausea

and vomiting [5], psychological illness and depression [6], obesity and overweight [7], sleep disorders, hormonal and sexual changes, preterm labor and preeclampsia [8-11]. In addition, during this period, pregnant women are associated with several risks such as endangering maternal health, abortion, stillbirth, preterm delivery, low birth weight, which entails heavy health care costs [12, 13].

There are also postpartum challenges such as overweight, sexual problems, headaches, postpartum depression, anger and anxiety, uncontrolled bleeding, perineal pain in the postpartum period, discomfort and burning when urinating, and chest pain for women. [14-20].

Self-care processes are one of the most important ways to help women during pregnancy and postpartum to overcome these challenge [21-23]. Self-care can lead to lifestyle changes, improvement of proper diets, intermittent therapies, reduction of emotional and mental stress, medication and exercise [24]. Self-care during pregnancy has principles and activities that help to maintain mother and fetus health. These activities also reduce the risk of pregnancy complications and mortality during pregnancy, childbirth, and postpartum [11, 25] because of identifying, the potential risks of pregnancy, childbirth and postpartum and preventing the adverse consequences of this period by correcting behavioral, physical and psychological factors [26]. Self-care processes can be provided by social networks. Women can use social networks to promote health literacy and doing self-care processes and thus ensure the health of themselves and their children at home [23]. Studies show that women use these networks during pregnancy and postpartum to obtain information about self-care processes. These networks help women to easily access the information they need as soon as possible by accessing the internet and using smartphone technology in anytime and anywhere [27, 28].

In addition to use of information on social networks, pregnant women can share their information and knowledge with others and use them to connect with their specialist, midwives, clinical providers and other pregnant mothers [29-31]. According to study by Chatwin et al. [32], when there are limitations on face-to-face contact for pregnant women, they can easily access to a wide range of information through social networks and establish immediate contact with other pregnant women and clinical providers to complete prenatal care processes.

Social networks can act as a powerful tool for empowerment to lead healthy lifestyles, better and more informed medical decisions, and generally to improve women's self-care processes during pregnancy, childbirth, and postpartum [33]. So, the aim of this study was the role of social networks in improving women's self-care during pregnancy and postpartum. In this study, the role of social networks in the self-care processes of women during this period in the field of lifestyle, management of common problems and complications of pregnancy, psychological and psychiatric issues and communication were investigated. Also, self-care behaviors in terms of demographic characteristics of women were investigated.

MATERIAL AND METHODS

Study population and sample

The present cross-sectional descriptive study was conducted in Fasa city (Fars province, Iran) in 2022. Sampling was done by convenience sampling method. The study population included women who referred to medical centers in Fasa. Two hundred and eighty-five pregnant women were invited to study. One hundred and ten pregnant women agreed to participate in the study. Finally, 96 women completed the questionnaire according to the below inclusion and exclusion criteria.

Inclusion criteria

- Being pregnant or at least one pregnancy
- At least 18 years old
- Being literate
- Women who did not need special care, or partial/absolute rest
- Absence of any underlying disease or severe complications of pregnancy and risk factors for childbirth that have been identified based on family health records or claims of a pregnant woman.
- Ability to work with smart phones
- Being a member of social networks (WhatsApp, Telegram, Instagram, etc.)
- Being voluntary to participate in the study
- Resident of Fasa city

Exclusion criteria are as follows

Women's reluctance to continue participating in the study

Questionnaire Development

The data collection tool is a researcher-made questionnaire. This questionnaire was designed by examining studies related to self-care in pregnancy and childbirth [21, 22, 34-37] and the role of social networks in self-care [23, 38-42]. Include 3 parts: first part includes demographics information such as (4 questions). The second part include 3 questions related to the type of social network, the period that participants are members of these networks and the amount of time used by it during a full day. The third part includes 44 questions about the role of social networks in women's self-care in four areas of lifestyle (18 questions), management of common problems and complications of pregnancy, childbirth and postpartum (11 questions), psychological and psychiatric issues (11 questions), communication (4 questions). Also, at the end of this section, an open-ended question for participants to get other

comments from participants.

To answer questions, a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) was used. The validity of the questionnaire was evaluated and confirmed by health information management (3 people) and medical informatics specialists (3 people) (with a history of scientific-research activities related to social networks). To assess the reliability of the questionnaire, after completing the questionnaire by 30 women, Cronbach's alpha coefficient was used (0.94%).

Data collection

Data collection was done by in-person referral to health centers (October 2021 to December 2021). After explaining the purpose of the study by the researcher and how to complete it, participants filled out questionnaires. After completing each questionnaire, it was reviewed by the researcher to

ensure that all questions were answered.

Data Statistics

In order to analyze the data, descriptive statistical tests (frequency, percentage, mean and standard deviation) and analysis of variance (ANOVA) were used. Data were analyzed by SPSS version 22.

RESULTS

Out of 96 pregnant women who participated in the study, 47.9% (41 women) were in the age of 28-37 years. Most of them (77.1%) had a diploma and less. 40.6% of the participants had no children at home (first pregnancy) or had just one child. Most of them (54.2%) also used these networks for 2-4 hours during a fully day. (Table 1).

Table 1: characteristic of participating women in the study

Variables		Frequency (Percent)
Age	27-18 years	38 (39.6)
	28-37 years	46 (47.9)
	>= 38	12 (12.5)
Education level	Diploma and less	74 (77.1)
	Associate	9 (9.4)
	Bachelor	8 (8.3)
	Masters	4 (4.2)
	PhD	1 (1.0)
Employment status	Housekeeper	76 (79.2)
	University student	13 (13.5)
	Employed	7 (7.3)
Children at home	(none) primigravida	39 (40.6)
	Only one child	39 (4.06)
	Two child and more	18 (18.8)
Duration of membership in social networks	1-3 year	40 (41.6)
	year	41 (42.8)
	>7 year	15 (15.6)
Duration of use of social networks during a fully day (24 hours)	1-2 hours	26 (27.1)
	3-5 hours	52 (54.2)
	6-8 hours	6 (6.2)
	>8 hours	12 (12.5)

The types of social networks used are shown in Fig 1. WhatsApp (99%), Telegram (25%) and Instagram (14.6%) were the most used social networks by women participants. Also, Eitta, Baleh, iGap and Twitter were not used at all (Eitta, Baleh, iGap social networks are Iranian messengers).

According to the findings, the role of social networks in self-care processes during pregnancy and postpartum were divided into four main axes: lifestyle, management of common problems and complications during pregnancy, childbirth and postpartum, psychological and psychiatric issues, and communication. In these 4 axes, 44 roles of social networks in improving the self-care processes of pregnancy from the perspective of women were

studied.

Among the 18 roles in the axis of lifestyle, "regular use of drugs and supplements" (4.43±0.81), "regular tests (screening, etc.) and timely and regular tests (screening, etc.) and ultrasounds during pregnancy" (4.22±0.90) and "regular visits to doctors and medical centers" (3.89±1.14) were the most important roles of social networks in improving women's self-care during pregnancy and postpartum." Meditation (concentration)" (2.18±1.13), "regular studying of books on pregnancy and childbirth" (2.25±1.31) and "enough rest" (2.59 ± 0.96) had the least important role in this axis.

In the axis of common complications and problem of

pregnancy among the 11 roles: "management and control of nausea and vomiting" (3.06 ± 1.12), "management and control of heartburn and dysphagia" (2.97 ± 1.12) and "management and control of fatigue" (2.67±1.07) were the most important roles. Also "management and improvement of leg swelling" (1.71±1.01), "control and management of lumbar muscle strain" (1.82 ±1.06), "management of complications due to iron deficiency" (1.97 ±1.11) in compared to other roles had the lowest important.

In the axis of psychology and psychiatry issues, among the 11 roles of social networks in improving women's self-care during pregnancy and postpartum, sub-axis "satisfactory marital relations" (2.90±1.10), "how to communicate with the fetus in the uterus" (2.77±1.01), and "how to cope with pregnancy and the fetus in the uterus" (2.81±1.15) were the most important roles and "social support" (1.17 ± 2.25), "educational issues during pregnancy" (2.51±1.15) and "improving employment status during pregnancy" (2.42±1.14) were also the least important roles. In this axis, social support refers to the mutual support of material-spiritual, mental-objective between individuals and also the exchange of material-spiritual, mental-objective resources between them so that individuals can satisfy their social needs in any situation [43].

In the axis of communication, among the 4 roles, "communication with a public health expert in health

homes" (4.07 ± 0.97) and "communication with peers (pregnant mothers)" (3.58 ± 0.99), respectively were the most and the least important roles.

In general, among all 44 different roles of social networks in women's self-care, "regular use of drugs and supplements", "timely and regular tests (screening, etc.) and ultrasounds during pregnancy" and "communication with a public health expert in health homes" were the most important roles. The least important roles were "management and control and improvement of foot edema", "management and control of complications due to iron deficiency" and "social support" (Table 3).

There was no significant relationship between age and the use of self-care services provided by social networks (P=0.13). But women more than 38 years were more likely to use self-care services through social networks. There was a significant relationship between the level of education of individuals with the use of self-care services provided by social networks (P=0.001) and individuals with postgraduate education and higher more than other women used from self-care services provided by social networks. Also, there was a significant relationship between the job and the use of self-care services provided by social networks (P=0.001) and college students in compared to women with housework and employees used more of self-care services provided by social networks.

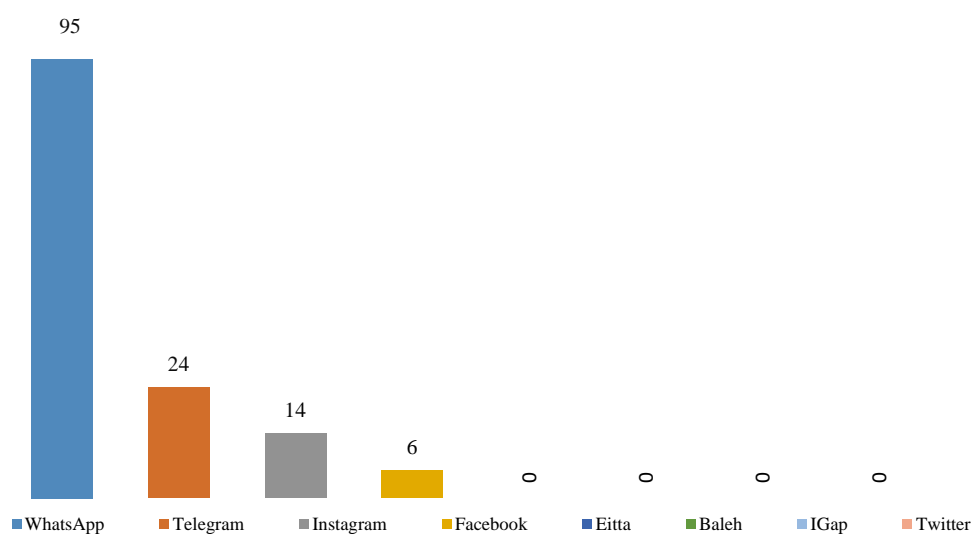


Fig 1: Types of social networks used by women participants (participants could choose more than one social network)

Table 3: The different roles of social networks in women's self-care processes

Axis	Different roles of social networks	Mean (±Std)
Lifestyle	Regular use of drugs and supplements	4.43 (±0.81)
	Timely and regular tests (screening, etc.) and ultrasounds during pregnancy	4.22 (±0.90)
	Timely and regular refer to the doctor and medical centers	3.89 (±1.14)
	Improving the diet and using healthy foods with the required calories (fruits, vegetables, etc.)	3.78 (±0.94)
	Observing the principles of hygiene in public places	3.62 (±1.04)
	Principles of personal hygiene	3.57 (±1.01)
	Regular and timely meals	3.55 (±1.00)
	Enough water and fluids	3.47 (±0.79)
	Regular participation in pregnancy and childbirth preparation classes	3.45 (±1.13)
	Weight management and control	3.39 (±1.03)
	Improving spiritual health	3.17 (±1.19)
	Situation and bed time management (sleep and wake time)	3.16 (±0.93)
	Enough rest	2.59 (±0.96)
	Management of smoking	2.92 (±1.21)
	Common activity and exercise during pregnancy	2.88 (±1.13)
	Management of underlying diseases during pregnancy and postpartum (diabetes, iron deficiency, hypertension, infection, placenta previa, etc.)	2.76 (±1.38)
	Encourage regular studying of books related to pregnancy and childbirth	2.25 (±1.13)
Doing meditation (concentration)	2.18 (±1.13)	
Management and control of common problems and complications during pregnancy and postpartum	Nausea and vomiting Management and control	3.06 (±1.12)
	Management and control of heartburn and dysphagia	2.97 (±1.12)
	Fatigue management and control	2.67 (±1.07)
	Breast changes Management and control	2.54 (±1.16)
	Management and control and improvement of asthma	2.23 (±1.18)
	Management, control and improvement of Dysuria & Frequency	2.16 (±1.07)
	Management and control of complications due to iron deficiency	1.97 (±1.11)
	Management and control of pregnancy and childbirth headaches	1.94 (±1.02)
	Management and control of lumbar muscle strain	1.82 (±1.06)
	Management, control and improvement of foot edema	1.71 (±1.01)
	Management and control of bleeding	1.49 (±0.87)
Psychological and psychiatric issues	Satisfactory marital relations	2.90 (±1.10)
	How to cope with pregnancy and the fetus in the uterus	2.81 (±1.15)
	How to communicate with the fetus in the uterus	2.77 (±1.01)
	Programming for better management of anxiety	2.61 (±1.01)
	Programming for better management of depression	2.60 (±1.02)
	How to cope with life problems such as economic problems, domestic violence and etc	2.56 (±1.15)
	Programming for better management of stress and fatigue	2.55 (±0.97)
	Increasing communication skills and its management	2.54 (±1.21)
	Educational issues during pregnancy	2.51 (±1.15)
	Improving employment status during pregnancy	2.42 (±1.14)
	Social support	2.25 (±1.17)
Communications	Communication with a public health expert in health homes	4.07 (±0.97)
	Communication with a midwifery	3.99 (±0.85)
	Communication with doctors (general, specialist, etc.)	3.80 (±0.89)
	Communicating with peers (pregnant mothers) by social networks	3.58 (±0.99)

There was no significant relationship between children at home and the use of self-care services provided by social networks (P=0.39). But women with one child at home were more likely to use them than other women. There was a significant

relationship between the use of self-care services provided by social networks and the duration of membership in social networks (P=0.002) and women who were members of these networks for more than seven years used self-care services provided by social networks more than others. Also,

women who used social networks for more than seven hours a day were more likely than other to receive these services.

Table 3: Utilization rate of self-care services provided by social networks according to demographic characteristics of women

Variables		Mean	Std. Deviation	Test results
Age	18-27 years	2.99	0.44	p-value=0.13 F=2.037
	28-37 years	3.11	0.56	
	>=38	3.18	0.43	
Education level	Diploma and less	2.91	0.41	p-value=0.001 F=9.520
	Associate	3.31	0.51	
	Bachelor	3.55	0.60	
	Masters	3.66	0.66	
	PhD	2.55	0.00	
Employment status	Housewife	2.90	0.42	p-value=0.001 F=19.974
	College student	3.70	0.39	
	employee	3.30	0.60	
Children at home	None (primigravida)	3.10	0.53	p-value=0.39 F=0.933
	Only one child	3.04	0.51	
	Two child and more	2.90	0.42	
Duration of membership in social networks	1-3 years	2.92	0.46	p-value=0.002 F=5.528
	4-7 years	3.01	0.45	
	>7 years	3.49	0.55	
Duration of use of social networks during a fully day (24 hours)	1-2 hours	2.79	0.36	p-value=0.001 F=7.455
	3-5 hours	3.03	0.47	
	6-8 hours	3.18	0.54	
	>8 hours	3.54	0.56	

DISCUSSION

The present study investigated the role of social networks in improving women's self-care during pregnancy and postpartum. WhatsApp, Telegram and Instagram were the most common networks used to receive women's self-care services. "regular use of drugs and supplements and how to use them", "timely and regular tests (screening, etc.) and ultrasounds during pregnancy" and "communication with a public health expert in health homes" were the most important role of social networks in improving women's self-care during pregnancy and postpartum. "Management and control and improvement of foot edema", "management of complications due to iron deficiency" and "social support" were the least important roles. There was a significant relationship between the time of using social networks during the day and demographic information of women. However, there was no significant relationship between age, children at home and gestational age with women's demographic information.

Social networks provided a platform for everyone to search and access health information. Social networks such as WhatsApp, Telegram, Facebook and Instagram are among the tools that are very helpful in promoting self-care processes [44] and are as a good tool in providing self-care processes for women during pregnancy and postpartum [45]. As mentioned in our study, WhatsApp, Telegram and

Instagram were the most common social networks used by women. Wikansari et al. [34] showed that pregnant women use WhatsApp and Instagram to receive self-care processes at home, of which WhatsApp is mostly used by pregnant women. Sulastri et al. [46] showed that WhatsApp is a good tool for providing health information related to childbirth preparation. Hicks et al. [47] also introduced Facebook as the most used social network to receive or access information about pregnancy and childbirth. In this study, women used Facebook to compare their physical body image with other pregnant women in before and after pregnancy. The results of their study showed that the use of Facebook may increase the risk of poor dissatisfaction with the appearance of the mother's body during pregnancy. Also, Mothers who already have an unattractive appearance may be attracting to this social network to compare their appearance.

Regular use of drugs and supplements and how to use them was one of the most important roles of social networks to improve self-care processes during pregnancy in this study. Sinclair et al. [48] found that pregnant women introduced social networks as a useful source to receive information on medication and how to use it. Fisher et al. [49] identified the regular and appropriate use of the drug among pregnant women and its impact on maternal and fetal health as a growing public health concern. Because women face difficult decisions about taking medications and supplements and how to use them during pregnancy, they need specific information to

help them make decisions. Therefore, it is better to establish advanced communication between patients and their providers about the regular use of drugs and supplements and how to use them [50]. Health care providers, obstetricians, and midwives can advise women about regular medication use, risks of not taking it, stopping or changing the dose of the drug while trying to conceive, during and after pregnancy and encourage them to ask their providers questions about how to take medications and supplements.

Another important role of social networks in the present study was "communication with health experts in health homes". Findings of the study Huesch et al. [51] showed that social networks provide a good platform for pregnant women to interact with providers and peers. The study by Kavlak et al. [52] also showed that 51% of pregnant women stated that they shared their information with public health experts. Setyani et al. [53] also showed that WhatsApp because of its ease of use and cost-effectiveness has been an effective medium for midwifery consultation with pregnant women, especially during the COVID-19 epidemic. Another study by Baker et al. [54] found that 89% of women use social network for questions during pregnancy and postpartum counseling. Due to the important role of social networks in supporting pregnant mothers, this study emphasized on more support for health care providers in answering mothers' questions and counseling through familiarity and more use through these networks.

Alexander et al. [55] created a group on Facebook under the guidance of a psychologist with the aim of reinforcing and improving the behaviors of pregnant mothers for the birth and growth of a healthy baby with an ideal weight. The group provided weekly videos on nutrition, sleep, parenting, and maternal well-being for peers in low-income families. The findings of their study showed that the group created for the women participating in the study was very attractive and significantly influenced the eating behaviors in families with infants at risk of obesity. Social networks are used to make communication because they enable to create channels and discussion groups with the participation of patients and people with special needs, physicians and other health care providers. Also exchange various educational and medical documents (e-books, articles and other items), multimedia files such as pictures or videos, video chat, access to counseling, improve telecommunications and simplify tasks, reduce counseling time, promote a collaborative environment for Improves the level of health care for people at any time of the day and in any place [56-60]. Some employee women and women in remote and rural areas can often easily and quickly receive instructions on care processes from health care providers. Therefore, the power of social networks

should not be underestimated because of their benefits.

"Social support" was one of the insignificant roles in receiving self-care services for women in the present study. Most of the women in the present study were housewives with diploma (non-university). These people have less social interaction with other people in the community. They are less able to communicate with others by social networks and express their feelings and emotional needs during pregnancy and postpartum. Women with low health literacy usually do not have enough knowledge about how to care during pregnancy and postpartum and how to use technologies such as the Internet and social networks. These skills should be taught to less educated housewives. There is a positive relationship between social support and maternal mental health (during pregnancy and postpartum) [42, 61]. Also some studies have shown that high levels of social support play a protective role in anxiety during pregnancy [62]. In a study by Kraut et al. [63] pregnant women stated that they needed emotional support during pregnancy. Therefore, social support during pregnancy and postpartum should be given special attention by health professionals and psychologists. It is easily possible by social networks with adequate management and supervision. Evans et al. [64] set up online support groups on social networks to support women experiencing postpartum depression. Most of the posts shared by women in these groups showed emotional support, followed by informational and instrumental support. These groups provided a safe place for postpartum women to connect with others and receive "information, encouragement and hope." In contrast, a study by Ginja et al. [65] showed that the use of technologies such as the Internet, tablets and mobile phones had no effect on women's social support and self-efficacy during pregnancy. In this study, it was suggested that more studies be conducted on the role of technologies on social support, welfare and self-efficacy of women during pregnancy.

The results of the present study showed that there is a significant difference between the level of education and receiving different services through social networks and women with postgraduate education and higher use more self-care services during pregnancy. In line with the results of this study, Deimazar et al. [23] also showed that pregnant women with higher education use social networks more to exchange their information. But Larsson et al. [66] showed that there was no significant relationship between receiving pregnancy-related information through Internet-based services and the level of education of pregnant women. Technologies such as the Internet, mobile phones and online social networks are popular sources of information for women during pregnancy and postpartum. In addition, today technologies are considered as

inseparable part of care systems. The use of technologies such as social networks can vary for various reasons such as age, level of education, income or occupation [67]. In this study, there was no significant difference between the age of women and receiving different services through social networks. But women over the age of 38 used social networks self-care services more than others. Researchers in other study [68] stated that the use of information and communication technology (ICT) depends on age and the acceptance of new technologies such as the Internet and mobile phones decreases with age. In study Urrutia et al. [69], women less than 30 years in contrast with woman over the age of 30 were more likely to use the social network Twitter and chat groups on the network. Studies show that the need for information is not always constant and can be influenced by a number of variables such as age, experience, education and geographical location.

Also In this study did not find a significant relationship between children at home and the use of self-care services provided through social networks. But women with one child at home were more likely to use social networks self-care services than other women. In the study by Urrutia et al. [69], women with one or more children at home may have used less social network self-care services than women without children due to less internet access.

There are several limitations to this study. Low sample size, which reduces the generalizability of the results, it is recommended that studies be conducted with a larger sample size. This study was performed only in health centers affiliated to a university of medical sciences in Fasa city in Fars province. Due to cultural differences and customs of the regions, similar studies need to be conducted in other regions of Iran and even other countries.

CONCLUSION

This study shows the role of social networks in improving women's self-care during pregnancy and postpartum. The findings of this study showed that social networks can play different roles in improving women's self-care during pregnancy and postpartum. Women during pregnancy and postpartum through

these networks can receive information about lifestyle, how to manage the complications of pregnancy, manage psychological and psychological issues and communicate with others. Also, through these networks, they take care of themselves during pregnancy and childbirth, thereby improving their health knowledge and literacy. Since information on these networks related to pregnancy is an important source for the survival of women and their children, it is important to note that the information on social networks should be reliable, accurate, because providing information wrong can endanger the lives of mother, fetus and newborn. Therefore, the information exchanged through these networks for self-care processes during pregnancy and postpartum requires careful and timely monitoring and management by health organizations, specialists, midwives and other clinical care providers. This will provide accurate and quality information to women during pregnancy and postpartum and thus improve the quality of self-care processes for them.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the time and effort of the women involved in our study.

For this study, the code of ethics with the number IR.KMU.REC.1400.576 was obtained from the ethical committee of KUMS. Patient's participation in the study was voluntary.

AUTHOR'S CONTRIBUTION

All authors contributed to the literature review, design, data collection and analysis, drafting the manuscript, read and approved the final manuscript.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this study.

FINANCIAL DISCLOSURE

No financial interests related to the material of this manuscript have been declared.

REFERENCES

- Jha P, Larsson M, Christensson K, Svanberg AS. Fear of childbirth and depressive symptoms among postnatal women: A cross-sectional survey from Chhattisgarh, India. *Women Birth*. 2018; 31(2): e122-33. PMID: 28756932 DOI: 10.1016/j.wombi.2017.07.003 [PubMed]
- Rodríguez-Almagro J, Hernández-Martínez A, Rodríguez-Almagro D, Quirós-García JM, Martínez-Galiano JM, Gómez-Salgado J. Women's perceptions of living a traumatic childbirth experience and factors related to a birth experience. *Int J Environ Res Public Health*. 2019; 16(9): 1654. PMID: 31085980 DOI: 10.3390/ijerph16091654 [PubMed]
- Zhang CH, Liu XY, Zhan YW, Zhang L, Huang YJ, Zhou H. Effects of prepregnancy body mass index and gestational weight gain on pregnancy outcomes. *Asia Pac J Public Health*. 2015; 27(6): 620-30. PMID: 26058899 DOI: 10.1177/1010539515589810 [PubMed]
- Baugh N, Harris DE, Aboueissa A-M, Sarton C, Lichter

- E. The impact of maternal obesity and excessive gestational weight gain on maternal and infant outcomes in Maine: Analysis of pregnancy risk assessment monitoring system results from 2000 to 2010. *J Pregnancy*. 2016; 2016: 5871313. PMID: 27747104 DOI: 10.1155/2016/5871313 [[PubMed](#)]
5. Hekmatpou D, Shamsi M, Zamani M. The effect of healthy lifestyle educational programs on the quality of life of the elderly in Arak. *Indian J Med Sci*. 2013; 67(3-4): 70-7. PMID: 24231395 [[PubMed](#)]
 6. Toosi M, Akbarzadeh M, Zare N. Relationship between maternal hematologic concentration and BMI in primiparous women on some physiological parameters in neonates. *Scientific Journal of Iranian Blood Transfusion Organization*. 2013, 10(1): 77-85.
 7. McGiveron A, Foster S, Pearce J, Taylor MA, McMullen S, Langley-Evans SC. Limiting antenatal weight gain improves maternal health outcomes in severely obese pregnant women: Findings of a pragmatic evaluation of a midwife-led intervention. *J Hum Nutr Diet*. 2015; 28 Suppl 1: 29-37. PMID: 24809211 DOI: 10.1111/jhn.12240 [[PubMed](#)]
 8. Shirazi M, Azadi F, Shariat M, Niromanesh S, Shirazi M. Effectiveness of stress management training on stress reduction in pregnant women. *Tehran University Medical Journal*. 2016, 74(7): 493-9.
 9. Chen Y-H, Keller J, Wang I-T, Lin C-C, Lin H-C. Pneumonia and pregnancy outcomes: A nationwide population-based study. *Am J Obstet Gynecol*. 2012; 207(4): 288. PMID: 23021691 DOI: 10.1016/j.ajog.2012.08.023 [[PubMed](#)]
 10. Bacaro V, Benz F, Pappaccogli A, De Bartolo P, Johann AF, Palagini L, et al. Interventions for sleep problems during pregnancy: A systematic review. *Sleep Med Rev*. 2020; 50: 101234. PMID: 31801099 DOI: 10.1016/j.smrv.2019.101234 [[PubMed](#)]
 11. Gomora A, Mukona D, Zvinavashe M, Dhaka A. The relationship between prenatal self care and adverse birth outcomes in young women aged 16 to 24 years. *IOSR Journal of Nursing and Health Science*. 2015; 4(1): 72-80.
 12. Kadar KS, Gani NF, Erfina E, Hariati S. Self-care management and health outcomes among Indonesian pregnant women. *Enfermería Clínica*. 2020; 30: 111-4.
 13. Soleiman Ekhtiari Y, Majlessi F, Rahimi Foroushani A. Measurement of the constructs of health belief model related to self-care during pregnancy in women referred to south Tehran health network. *Community Health*. 2015; 1(2): 89-98.
 14. Berg CJ, Callaghan WM, Henderson Z, Syverson C. Pregnancy-related mortality in the United States, 1998 to 2005. *Obstet Gynecol*. 2011; 117(5): 1230. PMID: 21705929 DOI: 10.1097/AOG.0b013e31821769ed [[PubMed](#)]
 15. Leddy M, Haaga D, Gray J, Schulkkin J. Postpartum mental health screening and diagnosis by obstetrician-gynecologists. *J Psychosom Obstet Gynaecol*. 2011; 32(1): 27-34. PMID: 21261561 DOI: 10.3109/0167482X.2010.547639 [[PubMed](#)]
 16. Martínez-Galiano JM, Hernández-Martínez A, Rodríguez-Almagro J, Delgado-Rodríguez M, Gómez-Salgado J. Relationship between parity and the problems that appear in the postpartum period. *Sci Rep*. 2019; 9(1): 11763. PMID: 31409871 DOI: 10.1038/s41598-019-47881-3 [[PubMed](#)]
 17. Prata N, Bell S, Weidert K. Prevention of postpartum hemorrhage in low-resource settings: Current perspectives. *Int J Womens Health*. 2013; 5: 737-52. PMID: 24259988 DOI: 10.2147/IJWH.S51661 [[PubMed](#)]
 18. Penniston T, Reynolds K, Pierce S, Furer P, Lionberg C. Challenges, supports, and postpartum mental health symptoms among non-breastfeeding mothers. *Arch Womens Ment Health*. 2021; 24(2): 303-12. PMID: 32803451 DOI: 10.1007/s00737-020-01059-3 [[PubMed](#)]
 19. Poskus T, Buzinskiene D, Drasutiene G, Samalavicius N, Barkus A, Barisauskiene A, et al. Haemorrhoids and anal fissures during pregnancy and after childbirth: A prospective cohort study. *BJOG*. 2014; 121(13): 1666-71. PMID: 24810254 DOI: 10.1111/1471-0528.12838 [[PubMed](#)]
 20. Hartmann JM, Mendoza-Sassi RA, Cesar JA. Postpartum depression: Prevalence and associated factors. *Cad Saude Publica*. 2017; 33(9): e00094016. PMID: 29019521 DOI: 10.1590/0102-311X00094016 [[PubMed](#)]
 21. Moulaei K, Sheikhtaheri A, Ghafaripour Z, Bahaadinbeigy K. The development and usability assessment of an mHealth application to encourage self-care in pregnant women against COVID-19. *J Healthc Eng*. 2021; 2021: 9968451. PMID: 34336175 DOI: 10.1155/2021/9968451 [[PubMed](#)]
 22. Moulaei K, Bahaadinbeigy K, Ghaffaripour Z, Ghaemi MM. The design and evaluation of a mobile based application to facilitate self-care for pregnant women with preeclampsia during COVID-19 prevalence. *J Biomed Phys Eng*. 2021; 11(4): 551-60. PMID: 34458202 DOI: 10.31661/jbpe.v0i0.2103-1294 [[PubMed](#)]
 23. Deimazar G, Kahouei M, Rahmanian M, Motamednejad N, Mehrabi P. Role of social networks in raising the level of self-care of pregnant women. *Journal Of Liaquat University of Medical & Health Sciences*. 2018, 17(03): 135-40.
 24. Gupta S K, Lakshmi P, Kaur M, Rastogi A. Role of self-care in COVID-19 pandemic for people living with comorbidities of diabetes and hypertension. *J Family Med Prim Care*. 2020; 9(11): 5495-501. PMID: 33532385 DOI: 10.4103/jfmpc.jfmpc_1684_20 [[PubMed](#)]
 25. Mottola MF, Davenport MH, Ruchat S-M, Davies GA, Poitras VJ, Gray CE, et al. 2019 Canadian guideline for physical activity throughout pregnancy. *Br J Sports Med*. 2018; 52(21): 1339-46. PMID: 30337460 DOI: 10.1136/bjsports-2018-100056 [[PubMed](#)]
 26. Heaman MI, Newburn-Cook CV, Green CG, Elliott LJ, Helewa ME. Inadequate prenatal care and its association with adverse pregnancy outcomes: A comparison of indices. *BMC Pregnancy Childbirth*.

- 2008; 8: 15. PMID: 18452623 DOI: 10.1186/1471-2393-8-15 [[PubMed](#)]
27. Kraschnewski JL, Chuang CH, Poole ES, Peyton T, Blubaugh I, Pauli J, et al. Paging "Dr. Google": Does technology fill the gap created by the prenatal care visit structure? Qualitative focus group study with pregnant women. *J Med Internet Res*. 2014; 16(6): e147. PMID: 24892583 DOI: 10.2196/jmir.3385 [[PubMed](#)]
28. Guerra-Reyes L, Christie VM, Prabhakar A, Harris AL, Siek KA. Postpartum health information seeking using mobile phones: Experiences of low-income mothers. *Matern Child Health J*. 2016; 20(Suppl 1): 13-21. PMID: 27639571 DOI: 10.1007/s10995-016-2185-8 [[PubMed](#)]
29. Harpel T. Pregnant women sharing pregnancy-related information on Facebook: Web-based survey study. *J Med Internet Res*. 2018; 20(3): e115. PMID: 29567636 DOI: 10.2196/jmir.7753 [[PubMed](#)]
30. Bartholomew MK, Schoppe-Sullivan SJ, Glassman M, Kamp Dush CM, Sullivan JM. New parents' Facebook use at the transition to parenthood. *Fam Relat*. 2012; 61(3): 455-69. PMID: 23671354 DOI: 10.1111/j.1741-3729.2012.00708.x [[PubMed](#)]
31. Lupton D, Pedersen S. An Australian survey of women's use of pregnancy and parenting apps. *Women Birth*. 2016; 29(4): 368-75. PMID: 26874938 DOI: 10.1016/j.wombi.2016.01.008 [[PubMed](#)]
32. Chatwin J, Butler D, Jones J, James L, Choucri L, McCarthy R. Experiences of pregnant mothers using a social media based antenatal support service during the COVID-19 lockdown in the UK: Findings from a user survey. *BMJ Open*. 2021; 11(1): e040649. PMID: 33455927 DOI: 10.1136/bmjopen-2020-040649 [[PubMed](#)]
33. Zhou L, Zhang D, Yang CC, Wang Y. Harnessing social media for health information management. *Electron Commer Res Appl*. 2018; 27: 139-51. PMID: 30147636 DOI: 10.1016/j.elerap.2017.12.003 [[PubMed](#)]
34. Wikansari N, Kurniawan A, Santoso DB. Feasibility of development and implementation of mobile-based homecare applications for mother and children services in Indonesia. *International Scientific Meeting on Health Information Management. ISMoHIM*; 2020.
35. Marak AI, El-Sheikh MA, Ahmed EMS. Effectiveness of evidence-based measures on nausea and vomiting during first trimester of pregnancy. *Evidence-Based Nursing Research*. 2021; 3(4): 9.
36. Patabendige M, Athulathmudali SR, Chandrasinghe SK. Mental health problems during pregnancy and the postpartum period: A multicenter knowledge assessment survey among healthcare providers. *J Pregnancy*. 2020; 2020: 4926702. PMID: 32685213 DOI: 10.1155/2020/4926702 [[PubMed](#)]
37. Manson JE, Bassuk SS. Vitamin and mineral supplements: What clinicians need to know. *JAMA*. 2018; 319(9): 859-60. PMID: 29404568 DOI: 10.1001/jama.2017.21012 [[PubMed](#)]
38. Zhang X, Liu J, Han N, Yin J. Social media use, unhealthy lifestyles, and the risk of miscarriage among pregnant women during the COVID-19 pandemic: Prospective observational study. *JMIR Public Health Surveill*. 2021; 7(1): e25241. PMID: 33293263 DOI: 10.2196/25241 [[PubMed](#)]
39. Hookway N, Elmer S, Frandsen M. Risk, morality and emotion: social media responses to pregnant women who smoke. *Health, Risk & Society*. 2017; 19(5-6): 246-59.
40. Chandrashekar PB, Magge A, Sarker A, Gonzalez G. Social media mining for identification and exploration of health-related information from pregnant women. *arXiv*; 2017; 1702.02261
41. Rezaie R, Mohammad-Alizadeh-Charandabi S, Nemati F, Mirghafourvand M. The effect of self-care counseling on health practices of adolescent pregnant women: A randomized controlled trial. *BMC Pregnancy Childbirth*. 2021; 21(1): 726. PMID: 34706682 DOI: 10.1186/s12884-021-04203-8 [[PubMed](#)]
42. Fisher J, Mello Mcd, Patel V, Rahman A, Tran T, Holton S, et al. Prevalence and determinants of common perinatal mental disorders in women in low-and lower-middle-income countries: A systematic review. *Bull World Health Organ*. 2012; 90(2): 139G-49G. PMID: 22423165 DOI: 10.2471/BLT.11.091850 [[PubMed](#)]
43. Zhang H, Ye Z, Tang L, Zou P, Du C, Shao J, et al. Anxiety symptoms and burnout among Chinese medical staff of intensive care unit: The moderating effect of social support. *BMC Psychiatry*. 2020; 20(1): 197. PMID: 32357865 DOI: 10.1186/s12888-020-02603-2 [[PubMed](#)]
44. Lau AY, Gabarron E, Fernandez-Luque L, Armayones M. Social media in health: What are the safety concerns for health consumers? *Health Inf Manag*. 2012; 41(2): 30-5. PMID: 23705132 DOI: 10.1177/183335831204100204 [[PubMed](#)]
45. El Hoda Moustafa Mohammed N, Ahmed MR, Ezz Elregal Ibrahim Eisa E, Ahmed Mohammed Sabry F. Effect of whats-app reminder messages on pregnant women' knowledge and behavior regarding antenatal health. *Egyptian Journal of Health Care*. 2021; 12(4): 1030-43.
46. Sulastri E, Linda S, Pelu TL. The effect of whatsapp video-based education about childbirth on the knowledge and attitudes of third trimester pregnant women. *Midwifery and Nursing Research Journal*. 2021; 3(2): 80-5.
47. Hicks S, Brown A. Higher facebook use predicts greater body image dissatisfaction during pregnancy: The role of self-comparison. *Midwifery*. 2016; 40: 132-40. PMID: 27428109 DOI: 10.1016/j.midw.2016.06.018 [[PubMed](#)]
48. Sinclair M, Lagan BM, Dolk H, McCullough JEM. An assessment of pregnant women's knowledge and use of the Internet for medication safety information and purchase. *J Adv Nurs*. 2018; 74(1): 137-47. PMID: 28880394 DOI: 10.1111/jan.13387 [[PubMed](#)]
49. Fisher B, Rose NC, Carey JC. Principles and practice of teratology for the obstetrician. *Clin Obstet Gynecol*.

- 2008; 51(1): 106-18. PMID: 18303504 DOI: 10.1097/GRF.0b013e318161d2c8 [[PubMed](#)]
50. Lynch MM, Squiers LB, Kosa KM, Dolina S, Read JG, Broussard CS, et al. Making decisions about medication use during pregnancy: Implications for communication strategies. *Matern Child Health J*. 2018; 22(1): 92-100. PMID: 28900803 DOI: 10.1007/s10995-017-2358-0 [[PubMed](#)]
51. Huesch MD, Galstyan A, Ong MK, Doctor JN. Using social media, online social networks, and internet search as platforms for public health interventions: A pilot study. *Health Serv Res*. 2016; 51 (Suppl 2): 1273-90. PMID: 27161093 DOI: 10.1111/1475-6773.12496 [[PubMed](#)]
52. Kavlak O, Atan ŞÜ, Güleç D, Öztürk R, Atay N. Pregnant women's use of the internet in relation to their pregnancy in Izmir, Turkey. *Inform Health Soc Care*. 2012; 37(4): 253-63. PMID: 22958087 DOI: 10.3109/17538157.2012.710686 [[PubMed](#)]
53. Rizka S, Ayu S. Implementation of e-Sekoci (the online class of Sekolah Komplementer Cinta ibu) in counselling midwives and pregnant women during COVID-19 pandemic. *Journal of Community Empowerment for Health*. 2021; 4(1): 16-20.
54. Baker B, Yang I. Social media as social support in pregnancy and the postpartum. *Sex Reprod Healthc*. 2018; 17: 31-4. PMID: 30193717 DOI: 10.1016/j.srhc.2018.05.003 [[PubMed](#)]
55. Fiks GA, Gruver RS, Bishop-Gilyard CT, Shults J, Virudachalam S, Suh AW, et al. A social media peer group for mothers to prevent obesity from infancy: The Grow2Gether randomized trial. *Child Obes*. 2017; 13(5): 356-68. PMID: 28557558 DOI: 10.1089/chi.2017.0042 [[PubMed](#)]
56. DeBenedictis A, Lettieri E, Masella C, Gastaldi L, Macchini G, Santu C, et al. WhatsApp in hospital? An empirical investigation of individual and organizational determinants to use. *PLoS One*. 2019; 14(1): e0209873. PMID: 30633754 DOI: 10.1371/journal.pone.0209873 [[PubMed](#)]
57. Serhrouchni S, Malmartel A. Diagnostic agreement between telemedicine on social networks and teledermatology centers. *Ann Fam Med*. 2021; 19(1): 24-9. PMID: 33431387 DOI: 10.1370/afm.2608 [[PubMed](#)]
58. Ebrahimpour A, Rajabali F, Yazdanfar F, Azarbad R, Nodeh MR, Siamian H, et al. Social network sites as educational factors. *Acta Inform Med*. 2016; 24(2): 134-8. PMID: 27147807 DOI: 10.5455/aim.2016.24.134-138 [[PubMed](#)]
59. Khademolhosseini F, Noroozi A, Tahmasebi R. The effect of health belief model-based education through telegram instant messaging services on Popsmeat performance. *Asian Pac J Cancer Prev*. 2017; 18(8): 2221-6. PMID: 28843259 DOI: 10.22034/APJCP.2017.18.8.2221 [[PubMed](#)]
60. Ayani S, Sadoughi F, Jabari R, Moulaei K, Ashrafi-Rizi H. Evaluation criteria for health websites: Critical review. *Frontiers in Health Informatics*. 2020; 9(1): 44.
61. Halbreich U, Karkun S. Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptoms. *J Affect Disord*. 2006; 91(2-3): 97-111. PMID: 16466664 DOI: 10.1016/j.jad.2005.12.051 [[PubMed](#)]
62. Gümüşsoy S, Keskin G, Çiçek Ö, Yiğitoğlu S, Kirazlı G, Yıldırım GÖ. Psychological problem areas of pregnant women diagnosed with abortion imminens as a result of assisted reproductive techniques: A comparative study. *Perspect Psychiatr Care*. 2021; 57(1): 73-81. PMID: 32367580 DOI: 10.1111/ppc.12526 [[PubMed](#)]
63. Mahmood K, Shafique F. Variable affecting the information needs and seeking behavior of educational administrators: A review. *Pakistan Journal of Library and Information Science*. 2013; 14: 26-32.
64. Evans M, Donelle L, Hume-Loveland L. Social support and online postpartum depression discussion groups: A content analysis. *Patient Educ Couns*. 2012; 87(3): 405-10. PMID: 22019021 DOI: 10.1016/j.pec.2011.09.011 [[PubMed](#)]
65. Ginja S, Coad J, Bailey E, Kendall S, Goodenough T, Nightingale S, et al. Associations between social support, mental wellbeing, self-efficacy and technology use in first-time antenatal women: Data from the BaBBLeS cohort study. *BMC Pregnancy Childbirth*. 2018; 18(1): 441. PMID: 30419842 DOI: 10.1186/s12884-018-2049-x [[PubMed](#)]
66. Larsson M. A descriptive study of the use of the Internet by women seeking pregnancy-related information. *Midwifery*. 2009; 25(1): 14-20. PMID: 17408822 DOI: 10.1016/j.midw.2007.01.010 [[PubMed](#)]
67. Shieh C, Mays R, McDaniel A, Yu J. Health literacy and its association with the use of information sources and with barriers to information seeking in clinic-based pregnant women. *Health Care Women Int*. 2009; 30(11): 971-88. PMID: 19809901 DOI: 10.1080/07399330903052152 [[PubMed](#)]
68. Kraut R, Brynin M, Kiesler S. *Computers, phones, and the Internet: Domesticating information technology*. Oxford University Press; 2006.
69. Urrutia RP, Berger AA, Ivins AA, Urrutia EG, Beckham AJ, Thorp Jr JM, et al. Internet use and access among pregnant women via computer and mobile phone: Implications for delivery of perinatal care. *JMIR Mhealth Uhealth*. 2015; 3(1): e25. PMID: 25835744 DOI: 10.2196/mhealth.3347 [[PubMed](#)]