Journal of Multidisciplinary Care (JMDC)
doi: 10.34172/jmdc.113 2023;12(2):56-62 http://jmdc.skums.ac.ir

Original Article

Evaluation of Pregnancy Self-care Status and it's Relationship with Social Support and Anxiety caused by COVID-19 Disease

Fariba Fathollahi-Dehkordi[1], Forouzan Ganji[1], Leili Rabiei[2*], Zahra Roghani[3]

[1]Department of Community Medicine, Social Determinants of Health Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran
[2]Department of Public Health, Social Determinants of Health Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran
[3]Social Determinants of Health Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran

Abstract

Background and aims: COVID-19 has adverse effects on health. The best way to prevent it is vaccination. One of the high-risk groups for COVID-19 is pregnant women. Self-care of pregnancy can reduce the adverse consequences of pregnancy, which are affected by many factors. The present study aims to investigate the self-care status of pregnancy and its relationship with social support and anxiety caused by Corona in pregnant women following the implementation of the national vaccination program for COVID-19.

Methods: A total of 199 pregnant women from comprehensive health service centers were included in the study and completed self-care questionnaires during pregnancy, social support, and anxiety questionnaires caused by corona. Data were analyzed by SPSS 18 software.

Results: The average score of self-care was 41.19±5.21, the average score of social support was 65.14±11.45, and the average score of anxiety caused by Corona was 10.64±8.93. The Pearson correlation test showed that self-care was significantly associated with social support ($P<0.05$, r: 0.347) but not coronavirus anxiety. The regression model showed that social support is the strongest predictor of pregnancy self-care ($P<0.001$).

Conclusion: Considering the favorable score of self-care and social support and the low score of corona anxiety of the participants in the study and comparing with the results of other studies in the COVID-19 pandemic and before vaccination, it seems that COVID-19 vaccination had a significant effect on the results. However, longitudinal studies are suggested to ensure the results.

Keywords: COVID-19, Self-care, Social support, Anxiety, Vaccination

***Corresponding Author:**
Leili Rabiei,
Email: leila_rabiei@yahoo.com

Received: October 19, 2022
Accepted: June 15, 2023
ePublished: June 30, 2023

Introduction

COVID-19 is a very acute and contagious disease that started in mid-December 2019 in China and gradually spread worldwide (1). To control and prevent the spread of this disease, the World Health Organization recommends the use of effective vaccines along with other preventive methods, including the use of masks, hand washing, proper ventilation of closed spaces, staying away from crowded places, and physical distancing (1,2). Following efforts to create an effective vaccine, research centers began to create vaccines with multiple platforms, including live attenuated viral vaccines, inactivated viral vaccines, protein component vaccines, replication-deficient vectors, and genetic vaccines (DNA and RNA vaccines) (3). Iran officially started the COVID-19 vaccination program on February 21, 2019. AstraZeneca and Sputnik vaccines, Sinopharm vaccine, Barkat vaccine, and PastoCovac vaccine are vaccines approved by the Ministry of Health of Iran, which were used more than other vaccines in the country's vaccination process (4-6). The wide coverage of COVID-19 vaccination significantly reduces hospitalizations and deaths caused by this disease. Also, by controlling the disease, restrictions on social activities are reduced, which can improve people's psychological and physical health (7).

One of the vulnerable groups against COVID-19 and its complications is pregnant women. Pregnant women are one of the high-risk groups for contracting severe types of COVID-19 due to the physiological changes that occur during pregnancy and its effects on the functioning of the immune system, which may lead to more mental and psychological effects in this group (8). Studies have shown that the COVID-19 pandemic has increased anxiety among pregnant women. This concern was about the dangers of COVID-19 for themselves and the unborn child (9). In Karimi and colleagues' study in 2020, which was conducted during the COVID-19 pandemic and before the implementation of the COVID-19 nationwide vaccination program, it was shown that most of the pregnant women participating in the study have high

anxiety about the COVID-19 disease, which can be associated with adverse pregnancy outcomes (8). Medina-Jimenez and colleagues' study, conducted before the implementation of the COVID-19 vaccination program, found that COVID-19 caused mental health problems and high levels of perceived stress, especially in the final months of pregnancy (10). Women should learn and use self-care skills to maintain their health and the health of the fetus (11).

Self-care during pregnancy is the principle of providing care that preserves the health of the mother and the fetus during pregnancy, delivery, and after delivery (12). Self-care activities during pregnancy can maintain the health of the mother and fetus during pregnancy, childbirth, and postpartum, as well as reduce mortality and problems caused by pregnancy and childbirth by identifying and reducing hidden risks during pregnancy and reconstructing behavioral factors (13). Pregnant women need information, skills, and social support to be effective in self-care during pregnancy (14). The meaning of social support is to establish a social interaction that starts with communication and leads to the establishment of empathetic communication and, finally, a safety net for the individual (15). Various research results have shown that having social support impacts life satisfaction, mental health, and general health, as well as reducing stress and feelings of loneliness (16). In research on pregnant women, it has been shown that social support from the family can have positive effects on mental health and reduce anxiety (17). In addition, effective social support in pregnant women improves self-care during pregnancy (8). The COVID-19 pandemic is one of the factors affecting the anxiety caused by this disease, self-care during pregnancy, and the factors affecting it. However, the wide implementation of the vaccination program has led to the control of disease, hospitalization, and mortality, considering that the studies on pregnancy self-care and the factors affecting it were conducted before the COVID-19 pandemic and before the implementation of the national vaccination program against this disease; therefore, this study aims to investigate the state of self-care during pregnancy and its relationship with social support and the anxiety caused by Corona, which was carried out after the implementation of the national vaccination program for COVID-19.

Materials and Methods

This cross-sectional, descriptive-analytical study was conducted in February and March of 2022 after the nationwide implementation of the national program of vaccination of COVID-19 on pregnant women under the comprehensive health service centers of Shahrekord city**.** The sample size in this study was determined to be 199 with the formula of correlation studies and considering the correlation coefficient of -0.21, the confidence factor of 95%, the test power of 80%, and the attrition rate of 10% (8). Sampling was done by multi-stage random method. In this way, in the beginning, with the coordination of the provincial health center, a list of comprehensive health service centers of Shahrekord city was prepared. Then, the centers (23 health centers) were divided into eight regions according to the geographical location, and one center was randomly selected and sampled from each region. It was done randomly from 8 comprehensive health service centers. After receiving the relevant permission, the researcher visited the centers and, while explaining the plan and coordinating with the officials of the centers, randomly selected samples according to the population of pregnant women covered by each center by random number table. The questionnaires were completed in electronic form. In this way, the sample was selected from the pregnant women, then contacted with them. After explaining the project's objectives, emphasizing the confidentiality of the information and voluntary participation in the study, a questionnaire link was sent to women. The criteria for entering the study included being covered in comprehensive health service centers in Shahrekord, willingness to participate, reading and writing literacy, and access to a mobile phone and appropriate software to receive and complete the questionnaire. The data collection questionnaire consisted of four parts. In the first part, the demographic information of the person was recorded. The person's demographic information includes age, spouse's age, occupation, spouse's occupation, income, marriage age, education level, pre-pregnancy body mass index, pre-pregnancy care, and the distance between the current and previous pregnancies. The second part was the pregnancy self-care questionnaire, which included 13 questions based on a 4-point Likert scale from never (with a score of 1) to always (with a score of 4), and the score range of the questionnaire was from 13 to 52. This questionnaire was standardized by Momeni et al., and Cronbach's alpha was 0.85 using the internal consistency method. This questionnaire examines self-care aspects, such as care against contracting infectious diseases, lifestyle, regular periodic pregnancy care, and regular use of medicine. (18). The third part of the perceived social support questionnaire was designed by Sarason et al and included 12 questions in the three areas of family, friends, and acquaintances, and based on a seven-point Likert scale from completely disagree with a score of 1 to completely agree with a score of 7. The score range of the questionnaire is from 12 to 84. This questionnaire questions the social support given to the pregnant woman by friends, family, and acquaintances (19). Naseh et al translated this questionnaire into Persian, and its Cronbach's alpha coefficient was determined to be 0.97 (20). The fourth part was the anxiety questionnaire caused by corona. This questionnaire was prepared and validated by Alipour and colleagues in Iran. The Corona Anxiety Questionnaire questions pregnant women's worries about contracting coronavirus or those around them. This tool has 18 items and two components (factors). Items 1 to 9 measure psychological symptoms, and items 10 to 18

measure physical symptoms. This tool was scored on a 4-point Likert scale (never = 0, sometimes = 1, most of the time = 2, and always = 3). Therefore, the highest and lowest scores obtained by respondents in this questionnaire are between 0 and 54. High scores in this questionnaire indicate a higher level of anxiety in people. The reliability of this tool was obtained using Cronbach's alpha method for the first factor (α = 0.879), the second factor (α = 0.861), and the whole questionnaire (α = 0.919) (21). To determine the level of desirability regarding the scores obtained from the questionnaires and due to the lack of a specific reference, the score obtained from the questionnaires was statistically converted to a scale of zero to 100. Based on this, a score of 0-33 was considered unfavorable, a score of 66-34 was considered average, and a score of 100-67 was considered favorable. Regarding the questionnaire on anxiety caused by corona, a score of 0-33 was considered low, a score of 66-34 as medium, and a score of 100-67 as high (18). After collecting the data, it was entered into SPSS 18 software and analyzed using descriptive statistics, Spearman correlation test, and regression model. Simple regression was used to predict the variables.

Results

In this study, 199 pregnant women completed the relevant questionnaires. The demographic characteristics of the study respondents are shown in Table 1.

According to Table 2, the average score for self-care was 41.19 ± 5.21, the average for social support was 65.14 ± 11.45, and the average score for anxiety after Corona was 10.64 ± 8.93. Table 3 showed that social support was favorable in 81.9% of respondents, 17.6% was average, and 0.5% was unfavorable. The pregnancy self-care score in 91.5% of the participants was favorable, and 8.5% of the participants were average. The score of anxiety caused by Corona in 81.9% of the participants was in the low range, 17.1% of the participants were medium, and 1% of the participants were high. Pearson's correlation test showed that self-care has a significant relationship with social support ($P < 0.001$, r: 0.347) and some demographic variables (distance between pregnancy ($P < 0.025$, r: 0.159), pre-pregnancy care ($P < 0.007$, r: 0.190) and job ($P < 0.009$, r: 0.186)). Anxiety caused by coronavirus was not related to self-care social support. Social support had a significant relationship with husband's age ($P < 0.032$, r: 0.152), husband's education ($P < 0.001$, r: 0.239), number of pregnancies ($P < 0.007$, r: 0.191), pre-pregnancy care ($P < 0.012$, r: 0.177) and interval between pregnancies ($P < 0.006$, r: 0.193) (Table 4).

The regression analysis shows a relationship between the Prognostication of social support variables, anxiety after corona, and some demographic variables with self-care variables. Among these variables, the predictability of social support is higher ($P < 0.001$; Table 5).

Discussion

This study aimed to investigate the state of self-care during pregnancy and its relationship with social support and the anxiety caused by Corona, which was carried out after the implementation of the national vaccination program for COVID-19. In the present study, the self-care of pregnant women under the comprehensive health service centers of Shahrekord was achieved in 91.5% of optimal and 8.5% of average people. In line with our results in the study of Naghizadeh, which was conducted before the coronavirus pandemic, also reported the self-care of pregnant women in two low-risk and high-risk age groups at a favorable level (22). However, in the study of Nurhasanah et al on Indonesian pregnant women (23) and the study of Rezaian et al on pregnant women from Mashhad (24), self-care

Table 1. Frequency distribution of demographic variables of study participants

	Variable	Frequency	Percent
Mother's age (y)	16-22	28	14.1
	23-29	83	41.7
	30-36	65	32.7
	37-42	23	11.6
Husband's age	20-28	36	18.1
	29-36	121	60.8
	37-44	36	18.1
	45-52	6	3
Mother's job	Housework	176	88.4
	Working outside the home	20	10.1
	Working inside the home	3	1.5
Mother's education	College Education	92	46.2
	Diploma	73	36.7
	Undergraduate education	34	17.1
Husband's education	College Education	58	29.1
	Diploma	99	49.7
	Undergraduate education	42	21.1
Household income	1-2.5 million	46	23.1
	2.5-5 million	89	44.7
	5-7.5 million	49	24.6
	7.5-10 million	13	6.5
	>10 million	2	1
Number of pregnancies	1	78	39.2
	2	74	37.2
	3	35	17.6
	4	6	3
	5	4	2
	6	2	1
Preconception care	Yes	89	44.7
	No	110	55.3
Interpregnancy interval	>3 years	156	78.4
	<3 years	43	21.6
BMI before pregnancy	<18.5	3	1.5
	19-24.9	97	48.7
	25-29.9	74	37.2
	>30	25	12.6

was at an average level. A study conducted in Ethiopia and Thailand in 2012 and 2018, before the start of the COVID-19 pandemic, showed poor self-care in pregnant women (25,26). The different results reported in different studies can be caused by demographic differences, cultural, social, and economic conditions of different countries, the level of access to health care, data collection tools, time conditions compared to the COVID-19 pandemic, and the vaccination program against this disease.

The study's results showed a significant relationship between the self-care of pregnant women and social support, so self-care has improved with the increase in social support. In the regression model, social support had a predictive effect on self-care and was the strongest predictor. In line with the present findings, in the study of Nurhasanah et al in 2020, it was observed that the social support of pregnant women directly affected self-care behaviors through empowerment regarding pregnancy-related complications (23). A study on Jewish and Arab pregnant women (27) also reported similar findings, which confirm the role of social support in improving self-care.

The findings of this study also showed that self-care has a significant relationship with some demographic variables (distance between pregnancy, pre-pregnancy care, and job) but not with other variables. Women who were housewives, women who had pre-pregnancy care, and women who had more than three years of interval between their pregnancies had significantly more self-care. In various studies, contradictory results have been reported in this regard; for example, in the study of Rezaeian et al, among the background variables, only education had a significant relationship with self-care (24). Another study by Chiavarini et al in 2014 reported that prenatal healthcare utilization was lower in younger, multiparous, unemployed, and less educated women (28). A 2009 study on Mexican women also showed that only living with a partner had a significant relationship with self-care among the socio-demographic characteristics. Other variables such as education, job, income, age, and number of pregnancies were not observed (29). In the present study, in line with Chiavarini and collegues' study,

Table 2. Average score of self-care, social support, and anxiety

Variable	Mean ± SD	Questionnaire score
Self-care	41.19 ± 5.21	13-52
Social support	65.14 ± 11.45	12-84
Anxiety caused by corona	10.64 ± 8.93	0-54

Table 3. Determining the frequency distribution of the desirability score of self-care, social support, and anxiety of the participants in the study

Variable	Desirability status (score)	Number	Percent
Self-care	Undesirable (0-33)	1	0.5
	Moderate (34-66)	35	17.6
	Desirable (67-100)	163	81.9
Social support	Undesirable (0-33)	0	0
	Moderate (34-66)	17	8.5
	Desirable (67-100)	182	91.5
Anxiety caused by Corona	Less (0-33)	163	81.9
	Moderate (34-66)	34	17.1
	Much (67-100)	2	1

Table 4. Correlation between independent factors and self-care variable during pregnancy

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1-Mother's age	1												
2-Spouse's age	R=0.745 *P*=0.000	1											
3-Job	r=0.163 *P*=0.021	r=0.015 *P*=0.837	1										
4-Education	r=0.261 *P*=0.000	r=0.101 *P*=0.157	r=0.213 *P*=0.003	1									
5-Wife's education	r=0.032 *P*=0.657	r=0.065 *P*=0.360	r=0.272 *P*=0.000	r=0.059 *P*=0.000	1								
6-Income	r=0.112 *P*=0.115	r=0.093 *P*=0.191	r=0.199 *P*=0.005	r=0.419 *P*=0.000	r=0.268 *P*=0.000	1							
7-Number of pregnancies	r=0.403 *P*=0.000	r=0.443 *P*=0.000	r=0.177 *P*=0.012	r=0.082 *P*=0.248	r=0.199 *P*=0.005	r=0.016 *P*=0.819	1						
8-Preconception care	r=0.072 *P*=0.310	r=0.003 *P*=0.966	r=0.010 *P*=0.889	r=0.074 *P*=0.296	r=0.184 *P*=0.037	r=0.049 *P*=0.490	r=0.081 *P*=0.258	1					
9-BMI	r=0.133 *P*=0.060	r=0.067 *P*=0.345	r=0.010 *P*=0.889	r=0.082 *P*=0.252	r=0.046 *P*=0.521	r=0.144 *P*=0.043	r=0.026 *P*=0.712	r=0.120 *P*=0.090	1				
10-Interpregnancy interval	r=0.062 *P*=0.385	r=0.068 *P*=0.338	r=0.141 *P*=0.047	r=0.043 *P*=0.548	r=0.058 *P*=0.413	r=0.115 *P*=0.105	r=0.197 *P*=0.005	r=0.055 *P*=0.442	r=0.014 *P*=0.848	1			
11-social support	r=0.053 *P*=0.461	r=0.152 *P*=0.032	r=0.032 *P*=0.658	r=0.112 *P*=0.117	r=0.239 *P*=0.001	r=0.066 *P*=0.351	r=0.191 *P*=0.007	r=0.177 *P*=0.012	r=0.002 *P*=0.979	r=0.193 *P*=0.006	1		
12-Pregnancy self-care	r=0.117 *P*=0.110	r=0.041 *P*=0.568	r=0.186 *P*=0.009	r=0.058 *P*=0.415	r=0.030 *P*=0.677	r=0.073 *P*=0.304	r=0.028 *P*=0.695	r=0.190 *P*=0.007	r=0.039 *P*=0.586	r=0.159 *P*=0.025	r=0.347 *P*=0.000	1	
13-Corona anxiety	r=0.080 *P*=0.262	r=0.088 *P*=0.219	r=0.022 *P*=0.575	r=0.021 *P*=0.768	r=0.048 *P*=0.504	r=0.162 *P*=0.023	r=0.043 *P*=0.545	r=0.014 *P*=0.847	r=0.008 *P*=0.913	r=0.123 *P*=0.083	r=0.003 *P*=0.396	r=0.003 *P*=0.963	1

Table 5. Prognostication of social support variables, anxiety after corona, and some demographic variables with self-care variables.

Independent variables	Standardized beta	*P* value
1-Mother's age	0.098	0.048
2-Spouse's age	0.007	0.87
3-Job	0.20	0.027
4-Education	0.11	
5-Wife's education	0.012	0.77
6-Income	0.10	
7-Number of pregnancies	0.014	0.56
8-Preconception care	0.092	0.049
9-BMI	0.0003	0.98
10-Interpregnancy interval	0.19	0.034
11-Social support	0.35	>0.001
13-Corona anxiety	0.21	0. 0.026

a significant relationship between self-care and job was observed, and probably, working women are in a better position to receive information about self-care and perform it through more interaction with other members of society and better economic conditions. However, according to the contradictions in the studies, it is recommended that more studies be conducted in this regard.

The anxiety caused by corona in 81.9 people participating in our study was in the low range. The low level of corona anxiety is probably due to the extensive vaccination against COVID-19 and the relative control of the infection at the time of the procedure. The study conducted in February and March 2022. Similar results were reported in the study by Bina et al. Thus, the average anxiety of coronavirus in pregnant women was 11.4, and 62.8% of women had low anxiety (30). In the study by Preis et al in April 2020, consistent with our study, 56% of English pregnant women had no or mild anxiety (31). The study by Karimi et al in December 2020 was conducted on Iranian pregnant women; it showed that most of the participants had a high level of anxiety caused by corona (8); also, in the study of Kahyaoglu Sut and Kucukkaya (32) and Akgor et al in May 2020 (33) And before the start of the corona vaccination program, a high prevalence of anxiety caused by corona in pregnant women has been reported. However, the discrepancy in some results can be attributed to implementing the COVID-19 vaccination program, cultural-social differences, the level of control and transmission of the disease in society, socially restrictive laws, the time of the study, and the tools and methods of data collection.

The results of the present study also showed that there is no significant relationship between demographic variables except household income and coronavirus anxiety, and the lack of correlation between demographic variables and coronavirus anxiety is probably due to the low anxiety level of women so the majority of research samples had mild anxiety. In Mirzaie and colleagues' study on pregnant women in Zabol, there was no statistically significant relationship between demographic characteristics and anxiety caused by COVID-19 (34). In the study by Bina et al, from March to June 2021 in Isfahan, the anxiety of coronavirus in pregnant women was not related to the number of pregnancies, pregnancies, and abortions. However, it was significantly related to the mother's and husband's occupations. Moreover, it is more in housewives and women whose husbands had a freelance job (30). The results of Shahid and collegues' study in August 2020 in Pakistan also showed a higher level of corona anxiety in pregnant women over 35 years old who had a high school education and were housewives (35). In the study of Kahyaoglu Sut et al, anxiety level had a significant relationship with job and education, and it was higher in pregnant women with less than 9 years of education and non-employed women (32). It seems that the difference between the individual-social factors of pregnant women in different countries is one of the reasons for the difference in the results of the studies, and considering the existing contradictions, it is recommended that more studies be conducted in this regard.

The results of the present study also showed that there is no significant relationship between the social support of pregnant women and the anxiety of the coronavirus, which is probably due to the low anxiety level of women, as the majority of the research samples had mild anxiety. In line with the present findings in the study of Behmard et al, which was observed in 2020 on 800 pregnant women across Iran, there is little significant relationship between perceived social support and anxiety about COVID-19 (36).

In the study of Shishehgar and colleagues, it was also stated that there is no significant relationship between social support and stress during pregnancy (37). Contrary to the above findings, in Karimi and colleagues' study, there was an inverse and significant relationship between the anxiety caused by the COVID-19 epidemic and the amount of social support received by pregnant women (8). In Canada, Lebel et al showed that 68% of women who suffered from pregnancy-related anxiety and sleep disorders during the COVID-19 pandemic experienced relief of anxiety symptoms and better sleep with social support (38).

The results of the study also showed that corona anxiety has no significant relationship with self-care in pregnant women. In Masjoodi and colleagues' study in 2020, before the implementation of the COVID-19 vaccination program, it was observed that there was a positive and significant relationship between COVID-19 fear and anxiety and self-care (39). In 2017, in a study aimed at investigating the relationship between stress, anxiety, and depression with self-care behaviors during pregnancy in women at risk of premature delivery, Rezaeian et al reported that there was a significant and inverse linear relationship between the self-care score and stress and depression. However, no significant linear relationship was observed between self-care and anxiety (24). The

difference observed in different studies can be influenced by several factors, such as the time of the study during the COVID-19 pandemic, the national coronavirus vaccination program, the place and method of conducting the study, and the sample collection method (30).

Conclusion

The results showed that most participants had favorable social support, self-care, and anxiety. Also, social support is considered the strongest predictor of self-care. Therefore, it is suggested that in future studies, targeted interventions should be made to increase awareness performance and provide appropriate solutions at the community level, especially the families of pregnant women, to increase social support for this vulnerable group. These interventions can lead to increased pregnancy self-care and subsequently improve pregnancy outcomes. One of the limitations of this study was its cross-sectional implementation in pregnant women at a specific time and place following the implementation of the COVID-19 vaccination program, which made it difficult to compare the results with other studies. Therefore, considering that the COVID-19 vaccination program is one of the health system's priorities and considering the ups and downs of the COVID-19 disease at the community level, it is recommended to conduct longitudinal studies at a wider spatial level.

Authors' Contribution

Conceptualization: Fariba Fathollahi-Dehkordi, Forouzan Ganji.
Data curation: Zahra Roghani.
Formal analysis: Leili Rabiei.
Investigation: Fariba Fathollahi-Dehkordi, Forouzan Ganji, Zahra Roghani, Leili Rabiei.
Methodology: Fariba Fathollahi-Dehkordi, Forouzan Ganji, Zahra Roghani, Leili Rabiei.
Project administration: Fariba Fathollahi-Dehkordi.
Resources: Vice President of Research and Technology of Shahrekord University of Medical Sciences.
Software: Leili Rabiei.
Supervision: Fariba Fathollahi-Dehkordi.
Validation: Fariba Fathollahi-Dehkordi, Zahra Roghani, Leili Rabiei.
Visualization: Fariba Fathollahi-Dehkordi, Zahra Roghani, Leili Rabiei.
Writing–original draft: Fariba Fathollahi-Dehkordi, Zahra Roghani, Leili Rabiei.
Writing–review & editing: Fariba Fathollahi-Dehkordi, Forouzan Ganji, Zahra Roghani, Leili Rabiei.

Competing Interests

The authors declare that there is no conflict of interest.

Ethical Approval

The Ethics Committee of Shahrekord University of Medical Sciences, Shahrekord, Iran, approved this study (code: IR.SKUMS.REC.1400.195). Necessary sampling and data collection arrangements were made with the authorities of the study setting, and clear information about the study's aim was provided to participants. They were ensured that their data would be kept confidential and that they would have access to the study results at will.

Funding

Vice President of Research and Technology of Shahrekord University of Medical Sciences.

Reference

1. Golahdooz M, Taherizadeh M, Laali A, Khoonsari M, Ajdarkosh H, Safarnezhad Tameshkel F, et al. A review on coronavirus 2019 disease (COVID-19, SARS-CoV-2): control and prevention. Razi J Med Sci. 2020;27(5):98-107. [Persian].
2. Elfiky AA. Anti-HCV, nucleotide inhibitors, repurposing against COVID-19. Life Sci. 2020;248:117477. doi: 10.1016/j.lfs.2020.117477.
3. Nagy A, Alhatlani B. An overview of current COVID-19 vaccine platforms. Comput Struct Biotechnol J. 2021;19:2508-17. doi: 10.1016/j.csbj.2021.04.061.
4. Jarynowski A, Semenov A, Kamiński M, Belik V. Mild adverse events of Sputnik V vaccine in Russia: social media content analysis of telegram via deep learning. J Med Internet Res. 2021;23(11):e30529. doi: 10.2196/30529.
5. Cerqueira-Silva T, de Araújo Oliveira V, Boaventura VS, Pescarini JM, Júnior JB, Machado TM, et al. Influence of age on the effectiveness and duration of protection of Vaxzevria and CoronaVac vaccines: a population-based study. Lancet Reg Health Am. 2022;6:100154. doi: 10.1016/j.lana.2021.100154.
6. Ahamed F, Ganesan S, James A, Zaher WA. Understanding perception and acceptance of Sinopharm vaccine and vaccination against COVID-19 in the UAE. BMC Public Health. 2021;21(1):1602. doi: 10.1186/s12889-021-11620-z.
7. Bagheri Sheykhangafshe F. COVID-19 vaccination: challenges and opportunities. J Rafsanjan Univ Med Sci. 2022;20(11):1289-94. doi: 10.52547/jrums.20.11.1289. [Persian].
8. Karimi L, Makvandi S, Mahdavian M, Khalili R. Relationship between social support and anxiety caused by COVID-19 in pregnant women. Iran J Obstet Gynecol Infertil. 2021;23(10):9-17. [Persian].
9. Corbett GA, Milne SJ, Hehir MP, Lindow SW, O'Connell M P. Health anxiety and behavioural changes of pregnant women during the COVID-19 pandemic. Eur J Obstet Gynecol Reprod Biol. 2020;249:96-7. doi: 10.1016/j.ejogrb.2020.04.022.
10. Medina-Jimenez V, de la Luz Bermudez-Rojas M, Murillo-Bargas H, Rivera-Camarillo AC, Muñoz-Acosta J, Ramirez-Abarca TG, et al. The impact of the COVID-19 pandemic on depression and stress levels in pregnant women: a national survey during the COVID-19 pandemic in Mexico. J Matern Fetal Neonatal Med. 2022;35(23):4438-41. doi: 10.1080/14767058.2020.1851675.
11. Aghababaei S, Omidifard F, Roshanaei G, Parsa P. The effect of self-care counseling on health practices of 35-year-old or more aged pregnant women referring to Hamadan Health Care Centers, in 2018. Avicenna J Nurs Midwifery Care. 2020;28(1):67-74. doi: 10.30699/ajnmc.28.1.67. [Persian].
12. Izadirad H, Niknami S, Zareban I, Hidarnia A. Predictors of self-care in pregnancy based on integration of health belief model and social support. J Guilan Univ Med Sci. 2017;26(103):53-62. [Persian].
13. Lertsakornsiri M. Factors relating to health promoting behaviors in pregnant adolescents in antenatal clinics, Bangkok metropolis. J Public Health. 2010(2):161-72.
14. Zhianian A, Zareban I, Ansari-Moghaddam A, Rahimi SF. Improving self-care behaviours in pregnant women in Zahedan: applying self-efficacy theory. Caspian J Health Res. 2015;1(1):18-26.
15. Holt-Lunstad J, Uchino B. Social support and health. In: Glanz K, Rimer BK, Viswanath K, eds. Health Behavior: Theory, Research, And Practice. Jossey-Bass/Wiley; 2015. p. 183-204.
16. Haugland T, Wahl AK, Hofoss D, DeVon HA. Association

between general self-efficacy, social support, cancer-related stress and physical health-related quality of life: a path model study in patients with neuroendocrine tumors. Health Qual Life Outcomes. 2016;14:11. doi: 10.1186/s12955-016-0413-y.
17. Neisani Samani L, Chehreh H, Seyed Fatemi N, Hosseini F, Karamelahi Z. Relationship between perceived social support and anxiety in pregnant women conceived through assisted reproductive technologies (ARTs). Iran Journal of Nursing. 2016;29(103):51-9. doi: 10.29252/ijn.29.103.51. [Persian].
18. Momeni Javid F, Simbar M, Dolatian M, Alavi Majd H. Comparison of pregnancy self-care, perceived social support and perceived stress of women with gestational diabetes and healthy pregnant women. Iran J Endocrinol Metab. 2014;16(3):156-64. [Persian].
19. Sarason, IG, Levine HM, Basham RB, Sarason BR. Assessing social support: The Social Support Questionnaire. Journal of Personality and Social Support 1983; 44: 127-39.
20. Nasseh M, Ghazinour M, Joghtaei MT, Nojomi M, Ri- hter J. A Persian Version of the Social Support Questionnaire (SSQ). Iranian J Refah Ejtemaee 2012; 11:251-66. [Persian].
21. Alipour A, Ghadami A, Alipour Z, Abdollahzadeh H. Preliminary validation of the corona disease anxiety scale (CDAS) in the Iranian sample. Health Psychol. 2020;8(32):163-75. doi: 10.30473/hpj.2020.52023.4756. [Persian].
22. Naghizadeh S, Fathnezhad-Kazemi A, Gavidel T. Relationship between self-care in pregnancy with perceived social support and stress among pregnant women in 29 Bahman hospital in Tabriz. Community Health. 2019;6(1):99-107. doi: 10.22037/ch.v6i1.21855. [Persian].
23. Nurhasanah R, Masrul M, Malini H, Tarawan VM. A structure equation model examining self-care behavior toward pregnancy-related complication and their associated factors among women in Indonesia. Open Access Maced J Med Sci. 2020;8(B):1047-52. doi: 10.3889/oamjms.2020.5109.
24. Rezaeian SM, Abedian Z, Latifnejad Roudsari R, Mazloom SR, Dadgar S. The relationship of prenatal self-care behaviors with stress, anxiety and depression in women at risk of preterm delivery. Iran J Obstet Gynecol Infertil. 2017;20(3):68-76. doi: 10.22038/ijogi.2017.8874. [Persian].
25. Zewdie T, Azale T, Shimeka A, Lakew AM. Self-medication during pregnancy and associated factors among pregnant women in Goba town, southeast Ethiopia: a community based cross sectional study. BMC Res Notes. 2018;11(1):713. doi: 10.1186/s13104-018-3821-8.
26. Panthumas S, Kittipichai W, Pitikultang S, Chamroonsawasdi K. Self-care behaviors among Thai primigravida teenagers. Glob J Health Sci. 2012;4(3):139-47. doi: 10.5539/gjhs.v4n3p139.
27. Taubman-Ben-Ari O, Chasson M, Abu-Sharkia S. Childbirth anxieties in the shadow of COVID-19: self-compassion and social support among Jewish and Arab pregnant women in Israel. Health Soc Care Community. 2021;29(5):1409-19. doi: 10.1111/hsc.13196.
28. Chiavarini M, Lanari D, Minelli L, Salmasi L. Socio-demographic determinants and access to prenatal care in Italy. BMC Health Serv Res. 2014;14:174. doi: 10.1186/1472-6963-14-174.
29. Quelopana AM, Champion JD, Salazar BC. Factors predicting the initiation of prenatal care in Mexican women. Midwifery. 2009;25(3):277-85. doi: 10.1016/j.midw.2007.04.008.
30. Bina R, Mohammadi F, Kohan S, Heidari Z. Assessing the level of coronavirus disease anxiety and its related factors in third-trimester pregnant women referring to the health centers of Isfahan during the pandemic. Int J Pediatr. 2022;10(5):16058-67. doi: 10.22038/ijp.2022.60668.4686.
31. Preis H, Mahaffey B, Heiselman C, Lobel M. Pandemic-related pregnancy stress and anxiety among women pregnant during the coronavirus disease 2019 pandemic. Am J Obstet Gynecol MFM. 2020;2(3):100155. doi: 10.1016/j.ajogmf.2020.100155.
32. Kahyaoglu Sut H, Kucukkaya B. Anxiety, depression, and related factors in pregnant women during the COVID-19 pandemic in Turkey: a web-based cross-sectional study. Perspect Psychiatr Care. 2021;57(2):860-8. doi: 10.1111/ppc.12627.
33. Akgor U, Fadıloglu E, Soyak B, Unal C, Cagan M, Temiz BE, et al. Anxiety, depression and concerns of pregnant women during the COVID-19 pandemic. Arch Gynecol Obstet. 2021;304(1):125-30. doi: 10.1007/s00404-020-05944-1.
34. Mirzaie F, Rezaie Keikhaie K, Badakhsh M, Khajehpour B, Ghofrani S. Evaluation of coronavirus anxiety in pregnant women on Apgar score and birth weight after one year of coronavirus outbreak (case study: Zabol, Iran). J Obstet Gynecol Cancer Res. 2021;7(2):89-98.
35. Shahid A, Javed A, Rehman S, Tariq R, Ikram M, Suhail M. Evaluation of psychological impact, depression, and anxiety among pregnant women during the COVID-19 pandemic in Lahore, Pakistan. Int J Gynaecol Obstet. 2020;151(3):462-5. doi: 10.1002/ijgo.13398.
36. Behmard V, Bahri N, Mohammadzadeh F, Delshad Noghabi A, Bahri N. Relationships between anxiety induced by COVID-19 and perceived social support among Iranian pregnant women. J Psychosom Obstet Gynaecol. 2022;43(3):307-14. doi: 10.1080/0167482x.2021.1918671.
37. Shishehgar S, Dolatian M, Bakhtiari M, Alavi Majd H. A survey of relationship between social support with quality of life as well as stress among pregnant women referred to Shahryar hospital affiliated to social security organization in 1391. Adv Nurs Midwifery. 2014;23(81):27-32. [Persian].
38. Lebel C, MacKinnon A, Bagshawe M, Tomfohr-Madsen L, Giesbrecht G. Elevated depression and anxiety symptoms among pregnant individuals during the COVID-19 pandemic. J Affect Disord. 2020;277:5-13. doi: 10.1016/j.jad.2020.07.126.
39. Masjoudi M, Aslani A, Seifi M, Khazaeian S, Fathnezhad-Kazemi A. Association between perceived stress, fear and anxiety of COVID 19 with self-care in pregnant women: a cross-sectional study. Psychol Health Med. 2022;27(2):289-300. doi: 10.1080/13548506.2021.1894344.

Cite this article as: Fathollahi Dehkordi F, Ganji F, Rabiei L, Roghani Z. Investigating the self-care status of pregnancy and its relationship with social support and anxiety caused by corona disease in pregnant women following the implementation of the national COVID-19 vaccination program. Journal of Multidisciplinary Care. 2023;12(2):56–62. doi: 10.34172/jmdc.113.