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Depression among Jordanian women during pregnancy in COVID-19: Role of social support

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ABSTRACT

Aims: To describe the level of depression and social support experienced by pregnant Jordanian women and assess the role of support and other factors on depression level among a sample of Jordanian women during pregnancy during the COVID-19 pandemic.

Method: The study invitation and link to an online survey were shared during November 2021 via social media and through word of mouth. A convenience sample of 434 pregnant women completed the study questionnaire, which included questions on their COVID-19 status, demographics, depression, and social. Depression was assessed using the Center for Epidemiologic Studies Depressive Scale (CES-D).

Results: The prevalence of depression among women during pregnancy was 28.3%. The mean of depression score among women during pregnancy was 24.3±4.4. The prevalence of social support among women during pregnancy were (63%). The mean social support score among the participants was 39.3±9.1. Factors associated with a higher depression score included not get influenza vaccination, not having insurance, described life as poor, having pressure, and not having social support.

Conclusion: This is a national study among women during pregnancy in Jordan. The study found that people who took influenza vaccination, having insurance, described life as poor, and having pressure, they experience more depression than other people. Moreover, our study found as social support increased, the depression decreased.

Keywords: pregnant, depression, social support, COVID-19

INTRODUCTION

Previous research on the impact of stressful events on the psychological health of women during pregnancy found that women who have just given birth are at greater risk for experiencing mental health issues associated with major stressors, high depression rates, and other perinatal mental health conditions [1, 2]. Other studies have established resilience among women during pregnancy and mothers during a disaster and low-stress levels in the long run compared to non-pregnant women when the disaster happened [3, 4]. Several studies conducted during the COVID-19 pandemic reveal high depressive and anxiety levels among women during pregnancy compared to those who were pregnant before the pandemic [3-5]. Most of these investigations compare women during pregnancy before and during the health crisis [6-8].

A recent study found that compared to women during pregnancy that contrasted postpartum no difference in anxiety and depression among non-pregnant women [9]. In contrast, studies have shown that hardships encountered during the perinatal period have yielded positive outcomes [10]. Despite this, additional studies should be done to shed more light on how pregnancy enables or hinders stress vulnerability among women in their reproductive age [11].

It is not clear whether being pregnant during a disaster increases women's susceptibility to worsening of mental illness or whether worse mental illness affects women during postpartum periods [12]. However, according to various studies, women perceive pregnancy as a protective phase due to low rates of suicide during this period and the first two years after giving birth. Besides, resilience in women during pregnancy is enhanced by weakened emotional and physiological reactions to distress [13, 14].

Some researchers argue that weakened emotional and physiological responses result from the effects of estrogen on cortisol. Women during pregnancy cope with stress in different ways. Some of these ways include social support, physical activities, and dispositional optimism, which promote women

during pregnancy's physical and psychological health [15,16]. A longitudinal study conducted in China showed the relationship between resilience and education levels and adaptive and maladaptive coping mechanisms [17]. The study revealed that women who use maladaptive coping mechanisms are susceptible to higher levels of postpartum depressive symptoms. In a Spanish cohort of women during pregnancy, the study revealed a relationship between low resilience and catastrophic and compulsive thoughts about the pandemic [18]. However, the study also revealed that coping mechanisms such as relaxation and physical exercise enable women during pregnancy to cope with the restrictions imposed to hinder the further spread of COVID-19.

The perception of social support among women during pregnancy and mothers is an important source of protection from stress and negative psychological issues during pregnancy. It contributes to lowering the susceptibility of women during pregnancy to affective post-natal symptoms. Individuals often use coping mechanisms to deal with stressful situations [19, 20]. Further, women during pregnancy who receive partner support and emotional support and those who regularly go outdoors were found to be more resilient and used positive coping mechanisms [20]. Therefore, identifying resources, pregnancy-related characters, and behaviors that enhance women's well-being enhances resilience and decrease depression level [21, 22]. When not treated, depression among women during pregnancy can result in effects that can exist in the long run on both the mother and the child. Therefore, it is crucial to examine how the pandemic has affected the mental well-being of women during pregnancy to enhance the identification of level of depression in their early stages and determine the most effective preventive strategies that would provide long-term results for the mother and infant. The present study aims to assess levels of depression and social support and determine the impact of social support on depression and identify predictors of depression of Jordanian women during the COVID-19 epidemic. The results presented in this study will provide a better insight into the experiences of Jordanian pregnant women and will set the stage for the development of possible strategies to help them deal with mental health issues during the pandemic and other crises.

METHOD

Design and Sample

Across-sectional study of 434 women during pregnancy was conducted. The study invitation and the link to the online survey were shared with potential participants via social media (e.g., Facebook and Instagram) and with people in the network of the researcher in November-December 2021. Women were encouraged to share the study invite with other potentially eligible women in their networks. Based on convenience sampling, an alpha of 0.05, a small effect size, and a power of 0.95. The minimum number of subjects required was 400. The survey was sent to 500 participants to ensure the enough size. The eligibility criteria for selecting participants included being at least 18 years of age pregnant woman residing in Jordan and able read and write in Arabic.

Measures and Variables

Depressive symptoms

This study utilized the Center for Epidemiologic Studies Depressive Scale (CES-D) to evaluate symptoms of depression in individuals [23]. The CES-D used in this study is a 10-item self-report scale for depression. Scholars have tested the scale in household interviews and psychiatric settings and found that respondents find it quick and easy to use and are receptive to using the scale [24]. The scale uses a 4-point Likert scale with participants indicating how frequently they experienced a range of feelings/emotions [25]. Positive responses were reversed, and responses were added up, so a high score suggests a higher-level depressive symptoms. In addition, participants with a score of ≥16 were categorized as having depressive symptoms. The Cronbach's alpha was .87.

Emotional/informational/tangible support

In this study, emotional/informational and tangible support were measured using the MOS social support survey [26]. The survey was developed by the medical outcomes study (MOS) carried out by RAND [26]. The survey, designed for patients, measures the availability of support in various domains.

In the MOS social support survey, emotional/information support was assessed with eight items while tangible support was assessed by four items. Responses for each item ranged from not at all to all the time with scores from one to five is a 12-item multidimensional, self-administered instrument developed to determine the availability of support among patients with prevalent and treatable chronic illnesses. The survey validates four subscales: tangible support and informational support. The items in the survey have a 5-point Likert response that assesses the availability of various types of support. The responses range from one to five. The total score was obtained by adding all responses, revealing a score from 100. We also calculated the scores for the subscales. The Cronbach's alpha was .83.

The study questionnaire also included several questions on their current pregnancy (trimester, number of fetuses, number of previous pregnancies) and other questions related to COVID-19 including whether the participants had COVID-19 and the COVID-19 vaccine and how their lives changed due to COVID-19. In addition, women were asked if they feel pressure "mental distress" due to the pandemic with responses on a Likert scare (I never feel anxious, …). Furthermore, the questionnaire inquired on smoking status, receipt of the influenza vaccine, and sociodemographic characteristics.

Statistical Analysis

The SPSS version 26 was used to analyze the data. Descriptive analysis was used to describe the demographic and obstetric characteristics of the participants. Pearson correlation was used to describe the association between depression and social support. The data showed it was normally distributed. Multiple regression was used to determine the predictors of depression after checking the appropriateness of the model. The p-value is considered to be significant at $p<0.05$.

Table 1. Demographical characteristics of participants (n=434)

Characteristics	Frequency	%
Insurance		
No	147	33.6
Yes	287	65.5
Monthly income (JD) (JD=1.4$)		
Less than 400 JD	272	62.1
400 JD or more	160	36.3
Education		
Primary or secondary	144	32.9
Diploma	94	21.5
University student	28	6.4
Bachelor's	146	33.3
Postgraduate	22	5.0
Number of previous pregnancies		
0	120	27.4
1	130	29.7
2	110	25.1
3 or more	74	16.9
Perceived of life status		
Excellent	26	5.9
Very good	77	17.6
Good	90	20.5
Accepted	137	31.3
Not good	101	23.1
Current pregnancy status		
Singleton	335	76.5
Twins	90	20.5
Multiple	9	2.1
Trimester		
First	129	29.5
Second	182	41.6
Third	118	26.9
Living area		
City	342	78.1
Village	91	20.8
Smoking		
No	292	66.7
Yes	141	32.2
Have you had COVID-19?		
No	212	48.4
Yes, the test result was positive	122	27.9
Yes, but the test result was not positive	81	18.5
Yes, but I have not received the results yet	19	4.3
Did you feel pressure during COVID-19 era?		
I never feel anxious	99	22.6
To a small degree	117	26.7
Moderately	94	21.5
Greatly	82	18.7
To the fullest	41	9.4
How life changed after COVID-19 era?		
Much better now	21	4.8
Somewhat better now	96	21.9
Almost unchanged	120	27.4
Somewhat worse now	106	24.2
Much worse now	91	20.8
Have you had COVID-19 vaccination?		
No	162	37.0
Yes	271	61.9
How often do you see news related to COVID-19?*		
Never	55	12.6
Barely	120	27.4
Sometimes	163	37.2
Always	95	21.7
Have you ever had an influenzashot before?		
No	150	34.2
Yes	170	38.8
Maybe	113	25.8

RESULTS

Demographical Variables

The response rate was 443 (88.6%). More than half of the participants were from the low-income family. The mean age of women is 28±5. Almost all women were distributed equally to all three trimesters (**Table 1**).

Description of Depression Among Women During Pregnancy During COVID-19 Era

The prevalence of depression among women during pregnancy was 36.3%. The mean of depression among women during pregnancy was 18.3±4.4. The items with highest agreement were I had a hard time concentrating on what I was doing 215 (49.3), everything you did felt stressful for me 209 (48.9), and my sleep was restless 197 (45.9) (**Table 2**).

Description of Support Among Women During Pregnancy During COVID-19 Era

The prevalence of acceptable social support among women during pregnancy were (63%). The mean of support among women during pregnancy was 39.3**±9.1.** The items with highest score were to what extent is there a person who can take you to the doctor when needed? 206 (47.5%), someone you trust or with whom you can talk about yourself or your problems 196 (45.2), and someone who understands your problems 190 (43.8%) (**Table 3**).

Correlation Between Depression and Social Support Among Women During Pregnancy in COVID-19

Pearson correlation was conducted to determine the correlation between depression and social support scores during COVID-19 era. The was a significant inverse relationship between them (r^2=-.124, p=.009).

Predictors of Depression Among Women During Pregnancy in COVID-19 Era

The model was significant (F=4.6, p=.001). Many factors were predicted depression among pregnancy women during COVID-19 era. These factors were previously having insurance (B=.198, p=.018), income (B=-.23, p=.034), described their life as poor (B=-.128, p=.028), having pressure (B=.144, p=.018) and degree of social support (B=-.110, p=.04). This means people who do not get influenza vaccination, not having insurance, described life as poor, and have low income and having pressure, and had no social support they experience more depression than other people.

DISCUSSION

According to this study, 91.2% of pregnant Jordanian women have experienced higher depression during the pandemic compared to pregnant women before pandemic. depression score was 24.3±4.4. According to a study [28], women during pregnancy (35.4%) in Turkey revealed an escalation of symptoms of depression in women during pregnancy and that these women received support in psychological aspects of the pandemic. In Canada, it was examined 1,987 women during pregnancy during COVID-19 era and found an increase in level of depression 37% of women [12].

Table 2. Description of depression among women during pregnancy during COVID-19 era

Depressions	Never		Rarely		Sometimes		All times	
	Count	Row n %	Count	Row n %	Count	Row n %	Count	Row n %
1. I was annoyed by things that usually do not bother me.	71	16.4	187	43.1	118	27.2	58	13.4
2. I had a hard time concentrating on what I was doing.	36	8.3	184	42.4	151	34.8	63	14.5
3. I felt depressed.	74	17.1	193	44.5	107	24.7	60	13.8
4. Everything you did felt stressful for me.	47	10.8	178	41.0	127	29.3	82	18.9
5. I felt hopeful for the future.	42	9.7	180	41.5	121	27.9	91	21.0
6. I got scared.	59	13.6	197	45.4	105	24.2	73	16.8
7. My sleep was restless.	63	14.5	174	40.1	104	24.0	93	21.4
8. I was happy.	49	11.3	177	40.8	135	31.1	73	16.8
9. I felt lonely.	89	20.5	155	35.7	125	28.8	65	15.0
10. I could not go any further.	96	22.1	168	38.7	114	26.3	56	12.9

Table 3. Description of support among women during pregnancy during COVID-19 era

Supports	Never/little of time		Sometimes		Most of the time/all the time	
	Count	Row n	Count	Row n	Count	Row n
Tangible support						
1. To what extent is there someone who can help you with your needs when you must stick to staying in bed or in bed?	83	19.1	163	37.6	188	43.3
2. To what extent is there a person who can take you to the doctor when needed?	68	15.7	160	36.9	206	47.5
3. To what extent can someone prepare your meals for you when you are unable to do so?	97	22.4	158	36.4	179	41.2
4. To what extent is there someone who can help you with your daily routine when you are sick?	97	22.4	151	34.8	186	42.9
Emotional/information support						
1. Someone you can count on to listen when you need to talk.	102	23.5	153	35.3	179	41.2
2. Someone to give you good advice about a crisis.	93	21.4	151	34.8	190	43.8
3. Someone to give you information to help you understand a situation.	94	21.7	166	38.2	174	40.1
4. Someone you trust or with whom you can talk about yourself or your problems.	78	18.0	160	36.9	196	45.2
5. Someone you really need advice from.	98	22.6	149	34.3	187	43.1
6. Someone you can share most of your worries and fears with.	89	20.5	170	39.2	175	40.3
7. Someone you can turn to for suggestions on how to deal with a personal problem.	85	19.6	155	35.7	194	44.7
8. Someone who understands your problems.	88	20.3	156	35.9	190	43.8

Table 4. Predictors of depression among women during pregnancy in COVID-19 era

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Standard error	Beta		
1	(Constant)	21.643	2.265		9.557	.000
	Trimester (first, second, third)	-.299	.284	-.053	-1.054	.293
	Living (city vs. village)	-.104	.519	-.010	-.201	.841
	Smoking (no vs. yes)	.422	.439	.047	.961	.337
	Vaccination (no vs. yes)	-.177	.448	-.020	-.396	.693
	News	.044	.219	.010	.199	.842
	Age (years)	-.049	.049	-.059	-1.013	.312
	Insurance (no vs. yes)	1.065	.449	.119	2.372	.018
	Income (high vs. low)	-.670	.383	-.230	-1.752	.021
	Education	.046	.177	.015	.261	.794
	Description of life status (poor vs. good)	-.441	.200	-.125	-2.204	.028
	Number of pregnancies	.191	.453	.021	.423	.673
	COVID-19 test positive or not	.066	.237	.014	.279	.780
	Degree of feeling of pressure	.477	.201	.144	2.370	.018
	Degree of social support	-.051	.250	-.110	-2.050	.040

In [5], it was emphasized that depression rates among women during pregnancy was intensified during COVID-19 era compared to periods before COVID-19 era in China. It is increased from 26% to 29.2% among pregnant women. The results show that the COVID-19 era triggered symptoms of depression among pregnant mothers.

The results of this study reveal that women who were pregnant in the courses of the COVID-19 pandemic experienced social support that was above the medium level. This is expected since many pregnant Jordanian women prefer to live around their families to get support during pregnancy. It was found that most pregnant women stayed with their family as a source of social support during the pandemic [29].

Contrary to our findings, the study in [30] found that pregnant women in China experienced less social support during the COVID-19 pandemic. There are significant cultural and demographic differences between Jordanian and Chinese women. Jordanian families tend to be larger and women in Jordan live around their family for the most part.

Our study found a significant inverse relationship between social support and depression whereby depression decreased as social support levels increased. Research conducted in China during the COVID-19 pandemic showed a high level of mental health issues among women during pregnancy [29, 30]. For example, it was shown that women during pregnancy have higher social support had less depression and other health problems [30]. Similarly, the study in [31] found that an increased social support during COVID-19 was associated with decreased depression in women during pregnancy. A study argued, COVID-19 experience has enabled individuals to consider the social support as protective against depression symptoms [32, 33]. This means that many of pregnant women were used their social support to support them and this will decrease their depression level.

Further, our findings support the importance of social support during pregnancy. A study [32] found a significant connection between women during pregnancy's social support during the pandemic and depression. It was found that level of depression and social support are correlated with each other significantly [34]. As the social support increase, the depression level will decrease. A similar study carried out in China also showed a high level of depression and anxiety levels among women during pregnancy [5]. The study also found a negative correlation between social support and depression in the pandemic. Therefore, these studies confirm the findings presented in the current study. Thus, it can be argued that social support during COVID-19 and depression in women during pregnancy have a negative relationship.

Our study found there are many predictors of depression among women during pregnancy during COVID-19 era. These predictors were not having influenza vaccination, lack of insurance, described life as poor, and having pressure, they experience more depression than other people. A study in Nigeria found that Women during pregnancy who had multiple children and their ages between 37 to 44 and working had more depression that other women [34]. In Ethiopia, a study among women during pregnancy found that having a husband with higher education level more likely to experience less depression compared to other women [35] and this with agreement in a study that conducted in Ching, but our study does not support this conclusion. However, no one could ignore the role of husband during pregnancy level for women [36]. People and women during need support during COVID-19 since the pandemic impact the life in harmful way [37-39].

Limitation

Using online form to collect data from the participants may limit the generalizability of the results [40]. Another limitation is using cross-sectional design, which limit the cause-and-effect relationship and showed there is a correlation between variables. Another limitation, this study is conducted in Jordan, which limit the generalizability just to people with the developing countries and same living conditions.

Implication

Our study found that policy makers need to implement more interventions and plan to improve the well-being and decrease depression among women during pregnancy. More attention is required for women during pregnancy without social support system and who suffering from chronic disease that impede their abilities to fight depression. Accessible mental health services using phone or other internet apps may help people who living in marginalized area to reach these services easily [41, 42]. Moreover, all women during pregnancy could benefit from these services because COVID-19 limited access to many mental services.

CONCLUSION

This is a national study among women during pregnancy in Jordan. The study found that people who took influenza vaccination, lack of insurance, described life as poor, and having pressure, they experience more depression than other people. Moreover, our study found as social support increased, the depression decreased.

Author contributions: All authors have sufficiently contributed to the study and agreed with the results and conclusions.

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Ethical statement: Authors stated that Jordan University of Science and Technology Ethics Board approved this research after data collection informed consent was signed from all participants.

Declaration of interest: No conflict of interest is declared by authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

REFERENCES

1. Abuhammad, S. Attitude of pregnant and lactating women toward COVID-19 vaccination in Jordan: A cross-sectional study. J Perinat Med. 2022;50(7):896-903. https://doi.org/10.1515/jpm-2022-0026 PMid:35503514
2. Hatamleh R, Abujilban S, AbuAbed ASA, Abuhammad S. The effects of a childbirth preparation course on birth outcomes among nulliparous Jordanian women. Midwifery. 2019;72:23-9. https://doi.org/10.1016/j.midw.2019.02.002 PMid:30771607
3. Pomer A, Buffa G, Ayoub M-B, et al. Psychosocial distress among women following a natural disaster in a low- to middle-income country: "Healthy mothers, healthy communities" study in Vanuatu. Arch Womens Ment Health. 2019;22(6):825-9. https://doi.org/10.1007/s00737-019-00980-6 PMid:31165924
4. Berthelot N, Lemieux R, Garon-Bissonnette J, Drouin-Maziade C, Martel É, Maziade M. Uptrend in distress and psychiatric symptomatology in women during pregnancy during the coronavirus disease 2019 pandemic. Acta Obstet Gynecol Scand. 2020;99(7):848-55. https://doi.org/10.1111/aogs.13925 PMid:32449178
5. Wu Y, Zhang C, Liu H, et al. Perinatal depressive and anxiety symptoms of women during pregnancy during the coronavirus disease 2019 outbreak in China. Am J Obstet Gynecol. 2020;223(2):240.e1-9. https://doi.org/10.1016/j.ajog.2020.05.009 PMid:32437665 PMCid:PMC7211756
6. Zanardo V, Manghina V, Giliberti L, Vettore M, Severino L, Straface G. Psychological impact of COVID-19 quarantine measures in northeastern Italy on mothers in the immediate postpartum period. Int J Gynecol Obstet. 2020;150(2):184-8. https://doi.org/10.1002/ijgo.13249 PMid:32474910 PMCid:PMC9087548

7. Racine N, Hetherington E, McArthur BA, et al. Maternal depressive and anxiety symptoms before and during the COVID-19 pandemic in Canada: A longitudinal analysis. Lancet Psychiat. 2021;8(5):405-15. https://doi.org/10.1016/S2215-0366(21)00074-2 PMid:33773109
8. Zhou Y, Shi H, Liu Z, et al. The prevalence of psychiatric symptoms of pregnant and non-women during pregnancy during the COVID-19 epidemic. Transl Psychiat. 2020;10:319. https://doi.org/10.1038/s41398-020-01006-x PMid:32950999 PMCid:PMC7501755
9. Hompson KA, Bardone-Cone AM. 2019-nCOV distress and depressive, anxiety and OCD-type, and eating disorder symptoms among postpartum and control women. Arch Womens Ment Health. 2021;24(4):671-80. https://doi.org/10.1007/s00737-021-01120-9 PMid:33738572 PMCid:PMC7972814
10. Nelson B. The positive effects of COVID-19. BMJ. 2020;369:m1785. https://doi.org/10.1136/bmj.m1785 PMid:32366620
11. Denckla CA, Mancini AD, Consedine NS, et al. Distinguishing postpartum and antepartum depressive trajectories in a large population-based cohort: The impact of exposure to adversity and offspring gender. Psychol Med. 2018;48(7):1139-47. https://doi.org/10.1017/S0033291717002549 PMid:28889814 PMCid:PMC5845817
12. 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. https://doi.org/10.1016/j.jad.2020.07.126 PMid:32777604 PMCid:PMC7395614
13. Payne JL. Depression: Is pregnancy protective? J Womens Health (Larchmt). 2012;21(8):809-10. https://doi.org/10.1089/jwh.2012.3831 PMid:22860768
14. Christian LM. Physiological reactivity to psychological stress in human pregnancy: Current knowledge and future directions. Prog Neurobiol. 2012;99(2):106-16. https://doi.org/10.1016/j.pneurobio.2012.07.003 PMid:22800930 PMCid:PMC3479316
15. Herrera AY, Hodis HN, Mack WJ, Mather M. Estradiol therapy after menopause mitigates effects of stress on cortisol and working memory. J Clin Endocrinol Metab. 2017;102(12):4457-66. https://doi.org/10.1210/jc.2017-00825 PMid:29106594 PMCid:PMC5718702
16. Ng QX, Venkatanarayanan N, Loke W, et al. A meta-analysis of the effectiveness of yoga-based interventions for maternal depression during pregnancy. Complement Ther Clin Pract. 2019;34:8-12. https://doi.org/10.1016/j.ctcp.2018.10.016 PMid:30712750
17. Yu M, Gong W, Taylor B, Cai Y, Xu DR. Coping styles in pregnancy, their demographic and psychological influences, and their association with postpartum depression: A longitudinal study of women in China. Int J Environ Res Public Health. 2020;17(10):3654. https://doi.org/10.3390/ijerph17103654 PMid:32455997 PMCid:PMC7277551
18. López DML, Hinojo CAB, Bernal JEA, et al. Resilience and psychological distress in women during pregnancy during quarantine due to the COVID-19 outbreak in Spain: A multicentre cross-sectional online survey. J Psychosom Obstet Gynecol. 2021;42(2):115-22. https://doi.org/10.1080/0167482X.2021.1896491 PMid:33730970
19. Farewell CV, Jewell J, Walls J, Leiferman JA. A mixed-methods pilot study of perinatal risk and resilience during COVID-19. J Prim Care Community Health. 2020;11:2150132720944074. https://doi.org/10.1177/2150132720944074 PMid:32674654 PMCid:PMC7370556
20. Preis H, Mahaffey B, Heiselman C, Lobel M. Pandemic-related pregnancy stress and anxiety among women pregnant during the COVID-19 pandemic. Am J Obstet Gynecol. 2020;2(3):100155. https://doi.org/10.1016/j.ajogmf.2020.100155 PMid:32838261 PMCid:PMC7295479
21. Jarde A, Morais M, Kingston D, et al. Neonatal outcomes in women with untreated antenatal depression compared with women without depression. JAMA Psychiatry. 2016;73(8):826-37. https://doi.org/10.1001/jamapsychiatry.2016.0934 PMid:27276520
22. Gentile S. Untreated depression during pregnancy: Short- and long-term effects in offspring. A systematic review. Neuroscience. 2017;342:154-66. https://doi.org/10.1016/j.neuroscience.2015.09.001 PMid:26343292
23. Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. Appl Psychol Meas. 1977;1(3):385-401. https://doi.org/10.1177/014662167700100306
24. Andresen EM, Malmgren JA, Carter WB, Patrick DL. Screening for depression in well older adults: Evaluation of a short form of the CES-D. Am J Prev Med. 1994;10(2):77-84. https://doi.org/10.1016/S0749-3797(18)30622-6 PMid:8037935
25. Zhang W, O'Brien N, Forrest JI, et al. Validating a shortened depression scale (10 item CES-D) among HIV-positive pple in British Columbia, Canada. PLoS One. 2012;7(7):e40793. https://doi.org/10.1371/journal.pone.0040793 PMid:22829885 PMCid:PMC3400644
26. Sherbourne CD, Stewart AL. The MOS social support survey. Soc Sci Med. 1991;;32(6):705-14. https://doi.org/10.1016/0277-9536(91)90150-B PMid:2035047
27. Dafaalla M, Farah A, Bashir S, et al. Validity, and reliability of Arabic MOS social support survey. Springerplus. 2016;5(1):1306. https://doi.org/10.1186/s40064-016-2960-4 PMid:27547680 PMCid:PMC4978659
28. Durankus F, Aksu E. Effects of the COVID-19 pandemic on anxiety in women during pregnancy: A preliminary study. J Matern Fetal Neonatal Med. 2020;35(2):205-11. https://doi.org/10.1080/14767058.2020.1763946 PMid:32419558
29. Szkody E, Stearns M, Stanhope L, McKinney C. Stress-buffering role of social support during COVID-19. Fam Process. 2021;60(3):1002-15. https://doi.org/10.1111/famp.12618 PMid:33220082 PMCid:PMC7753728
30. Xie RH, He G, Koszycki D, Walker M, Wen SW. Prenatal social support, postnatal social support, and postpartum depression. Ann Epidemiol. 2009;19(9):637-43. https://doi.org/10.1016/j.annepidem.2009.03.008 PMid:19443240
31. Zamani P, Ziaie T, Lakeh NM, Leili EK. The correlation between perceived social support and childbirth experience in women during pregnancy. Midwifery. 2019;75:146-51. https://doi.org/10.1016/j.midw.2019.05.002 PMid:31125906

32. Zhong QY, Gelaye B, VanderWeele TJ, Sanchez SE, Williams MA. Causal model of the association of social support with antepartum depression: A marginal structural modeling approach. Am J Epidemiol. 2018;187(9):1871-9. https://doi.org/10.1093/aje/kwy067 PMid:29617921 PMCid: PMC6118064
33. Ahorsu DK, Imani V, Lin CY, et al. Associations between fear of COVID-19, mental health, and preventive behaviours across women during pregnancy and husbands: An actor-partner interdependence modelling. Int J Ment Health Addict. 2020;20(1):68-82. https://doi.org/10.1007/s11469-020-00340-x PMid:32837427 PMCid:PMC7289236
34. Nwafor JI, Okedo-Alex IN, Ikeotuonye AC. Prevalence and predictors of depression, anxiety, and stress symptoms among women during pregnancy during COVID-19-related lockdown in Abakaliki, Nigeria. Malawi Med J. 2021;33(1):54-8. https://doi.org/10.1101/2020.08.30.20184697
35. Chuma BT, Sagaro GG, Astawesegn FH. Magnitude and predictors of antenatal depression among women during pregnancy attending antenatal care in Sodo Town, Southern Ethiopia: Facility-based cross-sectional study. Depress Res Treat. 2020;2020:6718342. https://doi.org/10.1155/2020/6718342 PMid:32308994 PMCid:PMC7152952
36. Zhao Y, Kane I, Mao L, et al. The prevalence of antenatal depression and its related factors in Chinese women during pregnancy who present with obstetrical complications. Arch Psychiatr Nurs. 2016;30(3):316-21. https://doi.org/10.1016/j.apnu.2015.11.012 PMid:27256935
37. Alhawatmeh H, Albataineh R, Abuhammad S. Differential effects of guided imagery and progressive muscle relaxation on physical and emotional symptoms in nursing students taking initial clinical training: A randomized clinical trial. Heliyon. 2022;8(10):e11147. https://doi.org/10.1016/j.heliyon.2022.e11147 PMid:36311359 PMCid: PMC9614822
38. AlAzzam M, Abuhammad S, Abdalrahim A, Hamdan-Mansour AM. Predictors of depression and anxiety among senior high school students during COVID-19 pandemic: The context of home quarantine and online education. J Sch Nurs. 2021;37(4):241-8. https://doi.org/10.1177/1059840520988548 PMid:33563066
39. AlAzzam M, Abuhammad S, Tawalbeh L, Dalky H. Prevalence and correlates of depression, anxiety, and suicidality among high school students: A national study. J Psychosoc Nurs Ment Health Serv. 2021;59(8):43-51. https://doi.org/10.3928/02793695-20210426-02 PMid: 34110946
40. Abuhammad S, Khabour OF, Alomari MA, Alzoubi KH. Depression, stress, anxiety among jordanian people during COVID-19 pandemic: A survey-based study. Inform Med Unlocked. 2022;30:100936. https://doi.org/10.1016/j.imu.2022.100936 PMid:35399332 PMCid:PMC8977212
41. AlAzzam M, Abuhammad S. Knowledge and attitude toward mental health and mental health problems among secondary school students in Jordan. J Child Adolesc Psychiatr Nurs. 2021;34(1):57-67. https://doi.org/10.1111/jcap.12301 PMid:33305863
42. Abuhammad S. Preparing for future pandemics: Challenges for healthcare leadership. J Healthc Leadersh. 2022;14:131-6. https://doi.org/10.2147/JHL.S363650 PMid:36118653 PMCid:PMC9480602