

Comparing Anxiety and Perceived Social Support in Hypertensive and Non-Hypertensive Pregnant Women in Khorramabad, Western Iran

Abstract

Background: Pregnant women are prone to experience anxiety and life-threatening problems such as hypertension. This study aims to compare the anxiety and perceived social support in hypertensive and healthy pregnant women in Khorramabad, western Iran. **Materials and Methods:** This is a cross-sectional study. Participants were 400 pregnant women aged 16–50 years (54 with hypertension and 346 without hypertension) who visited an obstetrics and gynecology clinic in Khorramabad, Iran, to receive routine prenatal care from September 2022 to March 2023. Their information was collected using a demographic/obstetrics form, the Beck Anxiety Inventory (BAI), and the Multidimensional Scale of Perceived Social Support (MSPSS). The data were analyzed using independent *t*-test, chi-square test, Pearson's correlation test, and multiple regression analysis. **Results:** Most of the women were at the gestational age of 21–32 weeks (45.70% non-hypertensive and 35.20% hypertensive). Of 54 (13.50%) hypertension women, 51 (12.75%) had gestational hypertension and three (0.75%) had chronic hypertension. The hypertensive women were older than healthy women (34.09 vs. 31.77 years, $p = 0.023$). The mean BAI score was higher in hypertensive women ($p < 0.001$). The mean total score of MSPSS was higher in hypertensive women, but the difference was not statistically significant ($p > 0.05$). There was a negative significant relationship between the BAI and MSPSS scores in both healthy ($r = -0.13$, $p = 0.040$) and hypertensive ($r = -0.49$, $p = 0.001$) groups. Hypertension could significantly predict about 41% of changes in anxiety. **Conclusions:** Policy-makers and maternity care providers are recommended to develop targeted social support programs to help reduce the anxiety of hypertensive pregnant women.

Keywords: Anxiety, hypertension, pregnant women, social support

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Introduction

Pregnancy is one of the important events in the lives of women and their families. In addition to fatigue and physical discomfort, pregnant women are prone to experience mood changes and even psychological disorders. A common psychological disorder in prenatal and postpartum periods is anxiety,^[1] which is associated with fear of childbirth, decreased coping strategies, eating disorders, suicidal ideation, and increased preterm birth rate.^[2–6] Maternal anxiety can also affect the infant's physical and cognitive development and the mother-infant relationship.^[7] Pregnancy-related anxiety is a maternal psychological disorder that is defined as worries and concerns about childbirth, pregnancy, and neonatal health.^[8] According to studies, the risk of anxiety during pregnancy is high in women with a history of abortion, stillbirth, preterm

delivery, psychiatric disorders, traumatic social events, and stressful events.^[9–11] In a recent study in Tabriz, northwest of Iran, it was shown that 37.5% of pregnant women had anxiety, and the factors of income, history of preterm delivery, and unintended pregnancy had a significant relationship with pregnancy-related anxiety.^[8] Social support is one of the most important factors related to anxiety and stress during pregnancy.^[12–17] Pregnant women with favorable social support have significantly less anxiety.^[15] Social support can be provided by many resources, such as family, friends, or spouse. Lack of social support has adverse effects on pregnancy outcomes.^[18] Perceived social support has a mediating role between anxiety symptoms and life satisfaction among pregnant women.^[19] Perceived social support refers to how people perceive that they can receive material, psychological, and overall

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support from friends, family members, and others in times of need.^[20]

Some women before, during, or after pregnancy may suffer from life-threatening problems such as hypertension, which is the most common cardiovascular problem and the third leading cause of death worldwide.^[21,22] Hypertensive disorders of pregnancy include chronic hypertension (present before pregnancy or diagnosed during pregnancy before the 20th week of pregnancy), gestational hypertension, and preeclampsia (occurring after 20 weeks of pregnancy). They are primarily prevalent in low- and middle-income countries.^[23] Chronic hypertension has been estimated to be present in 3%–5% of pregnancies.^[24,25] There are various risk factors for hypertension in pregnancy, including age <20 or >35 years, rural residential area, primigravida, multiple pregnancy, history of hypertension, history of abortion, history of diabetes, history of infertility, kidney diseases, obesity, race, and ethnicity.^[26-29] Hypertensive disorders of pregnancy are associated with many adverse consequences, such as cesarean delivery, fetal growth restriction, cerebrovascular problems, premature birth, and maternal and fetal death.^[30] In a study, it was shown that pregnant women with hypertension had higher depression, anxiety, and stress symptoms in comparison with controls.^[31]

Many studies have assessed the perceived social support of pregnant women in different countries,^[32-37] but there is scant research on hypertensive pregnant women. Sarmasti *et al.*^[38] investigated perceived social support in healthy pregnant women and pregnant women with preeclampsia in Kermanshah, Iran. They reported that women with preeclampsia perceived less social support compared to their healthy peers. Bedaso *et al.*,^[39] in a systematic review and meta-analysis study, reported a significant relationship between the risk of developing mental health problems (including anxiety) and low social support during pregnancy. Huang *et al.*^[40] assessed the relationship between perceived social support and pregnancy-related anxiety in pregnant women. They concluded that perceived social support might reduce the occurrence of pregnancy-related anxiety. The psychological health problems of pregnant women in low- and middle-income countries such as Iran may cause more worry. We found no study on the perceived social support status of pregnant women with anxiety and hypertension in Khorramabad, western Iran, which is a low-income city and the main settlement of the Lur people. In this regard and considering that pregnant women with different socioeconomic status and ethnicity in Iran may perceive social support differently, and given that anxiety and hypertension during pregnancy can cause serious adverse outcomes and need proper attention, this study aims to compare the anxiety and perceived social support between hypertensive and non-hypertensive pregnant women in Khorramabad city and identify the factors related to anxiety and social support.

Materials and Methods

This is a descriptive-comparative study with a cross-sectional design and was conducted from September 2022 to March 2023. The study population consists of all pregnant women aged 16–50 years who visited the obstetrics and gynecology clinic of Shahid Rahimi Hospital in Khorramabad, Iran for routine prenatal care ($n = 400$). Using a census method, all pregnant women were selected for the study. The inclusion criteria were pregnancy and reading and writing literacy. Exclusion criteria were neurological and mental diseases, presence of other chronic diseases, eclampsia or preeclampsia, and unwillingness to participate in the study. Of 400 pregnant women, 54 had hypertension (according to an obstetrician-gynecologist considering a diastolic blood pressure of ≤ 90 mmHg and/or a systolic blood pressure of ≥ 140 mmHg) who were put in the hypertensive group, and 346 had no hypertension, who were assigned to the non-hypertensive group.

The data were collected using a demographic/obstetrics form, the Beck Anxiety Inventory (BAI), and the Multidimensional Scale of Perceived Social Support (MSPSS) after obtaining ethical approval from Lorestan University of Medical Sciences and written informed consent from the participants. The demographic/obstetrics form surveys demographic data (age, occupation, educational level, and place of residence) and obstetrics information (parity, gestational age, and history of abortion). The BAI is a self-report measure of anxiety developed by Beck *et al.*^[41] in 1996. It has 21 items rated on a 4-point scale from 0 to 3. The total score ranges from 0 to 63; a score of 0–7 shows normal or minimal level; 8–15, mild level; 16–35, moderate level; and 36–63, severe level. We used the Persian version of BAI, whose validity and reliability were confirmed by Kaviani and Mousavi^[42] on the general population as well as clinically anxious patients in Iran, and by Ghassemzadeh *et al.*^[43] on Iranian college students. Kaviani and Mousavi reported good test-retest reliability ($r = 0.72$) and excellent internal consistency (Cronbach's $\alpha = 0.92$). Ghassemzadeh *et al.* reported high internal consistency (Cronbach's $\alpha = 0.87$) and acceptable test-retest reliability ($r = 0.74$). The MSPSS, developed by Zimet *et al.* in 1988,^[44] is a self-report measure of the perceived adequacy of support from three sources: Family, Friends, and Significant Other. It has 12 items rated on a 7-point scale from 1 (very strongly disagree) to 7 (very strongly agree). The total score ranges from 12 to 84, with higher scores indicating more perceived support. We used the Persian version of MSPSS, whose validity and reliability were confirmed by Bagherian-Sararoudi *et al.*^[45] In their study, Cronbach's alpha coefficient was reported as 0.84 for the overall scale and 0.90, 0.93, and 0.85 for the friends, significant others, and family subscales from the patient samples, respectively, and 0.92 for the overall scale and 0.89, 0.92, and 0.87 for the friends, significant others, and family subscales from the healthy samples, respectively.

Moreover, test-retest reliability with a 2-month interval was 0.84 for the overall scale and 0.73, 0.78, and 0.84 for the friends, significant others, and family subscales from the healthy sample, respectively. The collected data were described using frequency, percentage, mean, and standard deviation and were analyzed in SPSS v.24 software using independent *t*-test, chi-square test, Pearson's correlation test, and multiple regression analysis. $p < 0.05$ was set as the significance level.

Ethical considerations

In this study, all ethical principles were considered. After explaining the study objectives and methods to the participants, their informed consent was obtained. They were assured of the confidentiality of their information and were free to leave the study at any time. The study was approved by the ethics committee of Lorestan University of Medical Sciences in 2023 (Code: IR.LUMS.REC.1402.020).

Results

In this study, participants were 54 (13.50%) pregnant women with hypertension (51 with gestational hypertension and 3 with chronic hypertension) and 346 (86.50%) pregnant women without hypertension. Table 1 presents the demographic/obstetrics characteristics of women in two groups. The mean (SD) for the age of non-hypertensive and hypertensive pregnant women was 31.77 (8.02) and 34.09 (6.61) years, respectively. Based on the results of the chi-square test, the difference between the two groups in terms of age was statistically significant ($p = 0.023$), but there was no significant difference in other variables ($p > 0.05$) [Table 1].

The mean (SD) for the BAI score was 8.38 (4.06) in non-hypertensive women and 13.86 (8.10) in hypertensive women, indicating the higher anxiety level of hypertensive women. According to the *t*-test results, this difference was statistically significant ($t = -8.82$, $p < 0.001$) [Table 2]. The mean (SD) for the total score of MSPSS was 36.84 (12.06) in non-hypertensive women and 38.00 (14.08) in hypertensive women, but this difference was not statistically significant ($p = 0.611$) [Table 2]. Regarding the subscale scores of MSPSS, the difference in the adequacy of support from family, friends, and significant others was not statistically significant between the two groups, either ($p > 0.05$) [Table 2].

The Pearson correlation test was used to assess the relationship between anxiety and perceived social support of pregnant women. The results showed a negative significant relationship between anxiety and perceived social support in both non-hypertensive ($r = -0.13$, $p = 0.040$) and hypertensive ($r = -0.49$, $p = 0.001$) groups.

To find the predictors of anxiety in pregnant women, a multiple linear regression analysis was conducted. Based on the results [Table 3], only the factor of "hypertension" had the power to predict the anxiety of pregnant mothers ($\beta = 0.41$, $p < 0.001$). The value of the beta coefficient indicates that pregnant women with hypertension were 41% more likely to have anxiety. The results of multiple linear regression analysis for finding the predictors of perceived social support in pregnant women are presented in Table 4. Based on the results, none of the demographic/obstetrics factors could predict the adequacy of social support in pregnant women ($p > 0.05$).

Table 1: Demographic/obstetric characteristics of pregnant women in two groups

Characteristics		Non-hypertensive <i>n</i> (%)	Hypertensive <i>n</i> (%)	<i>p</i> *
Age	≤30 years	146 (42.20)	14 (27.50)	0.023
	>30 years	200 (57.80)	40 (72.50)	
Educational level	Lower than high school	116 (33.50)	17 (31.60)	0.992
	Diploma	105 (30.30)	15 (27.70)	
	Academic	125 (36.10)	22 (40.70)	
Parity	0	87 (25.10)	13 (24.10)	0.706
	1	79 (22.80)	17 (31.50)	
	2	95 (27.50)	15 (27.80)	
	>2	85 (25.60)	9 (16.60)	
Occupation	Housewife	166 (48)	28 (51.90)	0.211
	Self-employed	92 (26.60)	18 (33.30)	
	Employed	88 (25.40)	8 (14.80)	
Gestational age	≤20 weeks	108 (31.20)	17 (31.50)	0.526
	21–32 weeks	158 (45.70)	19 (35.20)	
	>32 weeks	80 (23.10)	18 (33.30)	
Place of residence	City	309 (89.30)	52 (96.30)	0.070
	Village	37 (10.70)	2 (3.70)	
History of abortion	Yes	57 (16.50)	9 (16.70)	0.923
	No	289 (83.50)	45 (83.30)	

*Chi-square test

Table 2: Mean scores of BAI and MSPSS in two study groups

Variable	Non-hypertensive Mean (SD)	Hypertensive Mean (SD)	Test results*
BAI	8.30 (4.06)	13.86 (8.10)	$T=-8.82, p<0.001$
MSPSS – total	36.84 (12.06)	38.00 (14.08)	$p=0.611$
MSPSS – support from family	12.44 (5.28)	12.44 (5.62)	$p=0.845$
MSPSS – support from friends	12.29 (4.94)	13.0 (5.47)	$p=0.240$
MSPSS – support from significant others	12.11 (4.83)	12.54 (5.28)	$p=0.522$

*Independent *t*-test**Table 3: Coefficients of linear regression model (dependent variable: BAI)**

Model	Unstandardized Coefficients		Standardized Coefficients Beta	<i>t</i>	<i>p</i>	95% CI	
	<i>B</i>	Std. Error				Lower Bound	Upper Bound
(Constant)	5.65	2.26		2.50	0.013	1.21	10.09
Age	-0.00	0.04	-0.01	-0.18	0.854	-0.08	0.07
Gestational age	0.02	0.04	0.02	0.60	0.548	-0.05	0.10
Parity	-0.01	0.26	-0.00	-0.03	0.973	-0.52	0.50
Hypertension	5.56	0.61	0.41	9.02	0.000	4.35	6.77
Educational level	-0.13	0.35	-0.01	-0.37	0.710	-0.83	0.56
Occupation	0.11	0.36	0.01	0.32	0.749	-0.56	0.83
Place of Residence	1.98	1.00	0.09	1.97	0.059	0.00	3.95
History of Abortion	1.14	0.80	0.06	1.43	0.152	-0.42	2.71

Table 4: Coefficients of linear regression model (dependent variable: MSPSS)

Model	Unstandardized Coefficients		Standardized Coefficients Beta	<i>t</i>	<i>p</i>	95% CI	
	<i>B</i>	Std. Error				Lower Bound	Upper Bound
(Constant)	45.31	4.90		9.24	<0.001	35.67	54.95
Age	-0.14	0.08	-0.09	-1.72	0.086	-0.30	0.02
Gestational age	0.08	0.09	0.04	0.90	0.369	-0.09	0.25
Parity	-0.30	0.56	-0.02	-0.54	0.586	-1.41	0.80
Hypertension	1.30	1.34	0.05	0.96	0.334	-1.34	3.92
Educational level	-0.40	0.77	-0.02	-0.51	0.606	-1.91	1.12
Occupation	-0.52	0.8	-0.03	-0.66	0.507	-2.08	1.03
Place of Residence	-3.17	2.18	-0.07	-1.45	0.147	-7.45	1.12
History of Abortion	-2.24	1.73	-0.06	-1.29	0.196	-5.65	1.16

Discussion

The purpose of this study was to compare the anxiety and perceived social support of hypertensive and non-hypertensive pregnant women referred to a hospital in the west of Iran, and identify the associated factors. In our study, it was found that the prevalence of hypertension in pregnant women was 13.5%, where 12.75% had gestational hypertension and 0.75% had chronic hypertension. The hypertensive women were older than non-hypertensive women, and this difference was statistically significant. The participants in both groups had mild anxiety; hypertensive women had higher anxiety than their non-hypertensive peers, and this difference was statistically significant. This is consistent with the results of Chapuis-de-Andrade *et al.* in Brazil,^[31] Nuryati and Amir in Indonesia,^[32] Dachew *et al.* in the UK,^[46] and Raina *et al.* in the US.^[47] Anxiety can increase the risk of gestational hypertension

and preeclampsia.^[47] This phenomenon is thought to be due to the large hormonal fluctuations that occur during pregnancy.^[48]

In the present study, the overall perceived social support of hypertensive pregnant women was higher than that of non-hypertensive peers, but the difference was not significant. No significant difference was reported between the two groups in the domains of perceived social support, either. This is against the results of Sarmasti *et al.*^[38] In their study, there was a statistically significant difference in perceived social support between healthy pregnant women and pregnant women with preeclampsia in Kermanshah, Iran. The women with preeclampsia in their study perceived less social support. This discrepancy can be related to differences in the type of disease, methodology, and the used instrument. In our study, pregnant women did not have preeclampsia, and the social support was measured by the MSPSS, while in Sarmasti *et al.*'s study, women had

preeclampsia and the social support appraisals scale was used for the assessment. Khazaeian *et al.*^[49] reported an MSPSS score higher in pregnant women with gestational hypertension referred to hospitals in Tabriz, northwest of Iran, than the score reported in our study. This discrepancy can be due to difference in perceived social support between ethnic groups^[50] or difference in economic conditions between Khorramabad and Tabriz cities. Tabriz is an Azeri-dominant industrial city, compared to Khorramabad city, which has a lower economic status and where most of residents are from the Lur ethnic groups. Those with higher economic status are more likely to benefit from social support provision.^[51] Low socioeconomic status is associated with low social support,^[52] may be due to the experience of frequent stressors and limited access to mental health services.

We found a significant negative relationship between anxiety and perceived social support in both non-hypertensive and hypertensive pregnant women, indicating that the increase in the adequacy of perceived social support (from the family, friends, or significant others) can reduce the anxiety of pregnant women, especially those with hypertension. This is consistent with the findings of Bedaso *et al.*, Huang *et al.*, and Dachew *et al.*^[39,40,46] Dachew *et al.* found associations between gestational hypertension and antenatal anxiety symptoms. Bedaso *et al.*^[39] suggested a significant relationship between the risk of developing anxiety and low social support during pregnancy. Huang *et al.*^[40] reported that perceived social support in Chinese pregnant women was negatively associated with pregnancy-related anxiety. Our results are not consistent with the results of Neisani Samani *et al.*^[50] They found no significant relationship between anxiety and perceived social support in pregnant women conceived by assisted reproduction technology. This discrepancy may be due to differences in the study samples and area. In their study, women had a history of infertility and were living in Tehran, the capital of Iran. The influence of anxiety symptoms on social interaction and social relations may explain the result. During pregnancy, providing women with sufficient social support from friends, partner, or family members can improve a pregnant woman's comfort and satisfaction with life which can relieve physical and mental stress. Perceived social support can mediate anxiety symptoms and life satisfaction among pregnant women.^[53] Based on our results, hypertension could significantly predict 41.7% of changes in the anxiety of pregnant women. The factors of age, gestational age, parity, educational level, occupation, place of residence, and history of abortion could not predict anxiety and social support in pregnant women.

This is the first study that surveys the perceived social support of both hypertensive and non-hypertensive groups of pregnant women in Khorramabad, Iran, along with controlling the confounders; however, there were some disadvantages, including the use of a cross-sectional

design, the use of self-report tools for assessment which can increase the potential of response bias, not assessing the pregnancy outcomes (no follow-up), and not including the pregnant women with other hypertensive disorder of pregnancy (i.e., preeclampsia). The short duration of the study, the use of the MSPSS for measuring perceived social support (which can only assess the support received from family, friends, or significant others), and not assessing other effective factors (such as the hospital environment, behaviors of medical staff, or midwifery issues that can cause anxiety in pregnant women) were the limitations of this study. Moreover, as this study was conducted in one city (Khorramabad), one should be cautious when generalizing the results to all pregnant women in Iran and/or other countries. Therefore, it is recommended to conduct further studies with other types of design (e.g., longitudinal, qualitative) using different tools for assessment of other anxiety-related factors and the perception of other kinds of social support (e.g., emotional and instrumental) in hypertensive pregnant women living in other parts of Iran or in other countries.

Conclusion

The anxiety level of hypertensive pregnant women attending obstetrics and gynecology clinics in western Iran is higher than that of healthy peers, but there is no difference between them regarding their perceptions of the adequacy of social support received from the family, friends, or significant others. There is a significant negative relationship between anxiety and perceived social support in both non-hypertensive and hypertensive pregnant women, which suggests that the increase in social support for pregnant women can lead to a decrease in their anxiety. Therefore, policy-makers and those working in maternity care centers should consider the development of targeted social support programs to help reduce mental health problems among pregnant women. The use of individual or group counseling and providing educational interventions to pregnant women and their families, especially their husbands, during prenatal care visits are also recommended.

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Conflicts of interest

Nothing to declare.

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