BMJ Open Relationship of domestic violence with pregnancy symptoms and pregnancy experience in Iranian pregnant women: a cross-sectional study

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ABSTRACT

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Objective Violence has had adverse effects on the physical and psychological dimensions of pregnant women. This study was conducted with the aim of determining the relationship of domestic violence with pregnancy symptoms and pregnancy experience. **Design** In this cross-sectional study, pregnant women were selected through two-stage cluster sampling method. Data were collected using the domestic violence questionnaire of the WHO, pregnancy symptoms inventory (PSI) and pregnancy experience scale (PES). To determine the relationship between domestic violence with pregnancy symptoms and pregnancy experience, adjusted general linear model was used in multivariate analysis.

Setting Health centres in Urmia—Iran in 2022. Participants 415 pregnant women.

Results The frequency of emotional, physical and sexual violence was 86.0%, 67.7% and 79.5%, respectively. The mean (SD) of PSI was 49.45 (14.38) with attainable score of 0-123 and PES including happiness and worry was 14.32 (6.48) and 16.21 (2.51) with attainable score of 0-30, respectively. Based on the adjusted general linear model, the mean score of PSI in women who experienced physical violence (mild (p<0.001) and moderate (p<0.001)); sexual violence (mild (p<0.001), moderate (p<0.001) and severe (p<0.001)); and emotional violence (mild (p<0.001), moderate (p=0.002) and severe (p<0.001)) was significantly higher than women without experiencing violence. The mean score of happiness during pregnancy in women who experienced physical violence (moderate (p=0.011)) and emotional violence (mild (p<0.001), moderate (p=0.002) and severe (p<0.001)) was significantly lower than women without experience of violence. Also, the mean score of worry scores in women with experience of sexual violence (mild (p=0.001) and moderate (p=0.012)) and emotional violence (mild (p<0.001), moderate (p<0.001)) and severe (p<0.001)) was significantly higher than women without experiencing violence.

Conclusion Considering the relationship between violence and pregnancy symptoms and pregnancy experiences, it is necessary to use appropriate strategies to prevent violence in pregnant women.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Random sampling.
- \Rightarrow Examining the relationship between domestic violence and pregnancy symptoms and pregnancy experience for the first time in Iran.
- \Rightarrow The lack of causal conclusions due to the crosssectional design.
- ⇒ The lack of cultural influences control that may affect domestic violence.

INTRODUCTION

Protected by copyright, including for uses related to text Pregnancy is one of the most important stages of a woman's life, is considered a natural event in the life cycle of women and is a pleasant experience for most women.¹ The a pleasant experience for most women.¹ The experience of pregnancy, along with its physical and mental changes, affects all aspects of \exists life, including people's psyche. Although the experience of pregnancy is usually pleasant, ≥ it can be associated with unpleasant experiences such as insufficient sleep, common pregnancy discomforts, various physical discomforts and a reduced ability to do some tasks.² Despite taking the relevant care, pregnancy is always associated with extensive phys-<u>0</u> ical and mental challenges and is considered a stressful experience.³ Most mothers, as soon as they get pregnant and experience pregnancy, see themselves in danger, believe that pregnancy is a stressful event and consider it **o** a cause of worry. Concerns related to pregnancy include concerns about the health of $\overline{\mathbf{g}}$ the fetus, physical symptoms, parenting, relationships with others and childbirth.⁴

Due to the presence of symptoms and physiological changes⁵ and the occurrence of common problems, pregnancy will have significant effects on the mental state of pregnant women. Problems such as frequent nausea and vomiting,^{3 6} and sudden pains that change a woman's ability to perform

the usual roles of life⁷ cause the person to experience symptoms related to pregnancy such as fatigue, weakness, more nausea and vomiting, heartburn, and sleep disorders.⁶ Physiological and psychological changes during pregnancy also have a significant effect on the daily and communication activities of pregnant women. According to the available evidence, pregnancy and the transition to the role of a parent can cause a disturbance in the balance and peace of couples and a change in their communication pattern.⁸ ⁹ Misconceptions about pregnancy¹⁰ and abnormal feelings about pregnancy, changes in the communication pattern and reduction of sexual relations,¹¹ dual feelings to the pregnancy, increasing economic pressure and greater vulnerability of women in this period^{10 12 13} can be a starting or sometimes intensify domestic violence against pregnant women.

Domestic violence is defined as aggressive and suppressive behaviours, including physical, sexual and psychological attacks,^{3 14} as well as applying economic pressure by any person towards a person with whom he has a close relationship.⁸ Also, based on WHO definition 'Domestic abuse, also called 'domestic violence' or 'intimate partner violence', can be defined as a pattern of behaviour in any relationship that is used to gain or maintain power and control over an intimate partner. Abuse is physical, sexual, emotional, economic or psychological actions or threats of actions that influence another person. This includes any behaviours that frighten, intimidate, terrorise, manipulate, hurt, humiliate, blame, injure or wound someone'.¹⁵ Pregnant women are one of the groups at higher risk of encountering violence, and pregnancy not only does not protect women from violence, but in most cases, violence starts or increases during pregnancy.¹⁶ Unfortunately, some women, during their pregnancy, instead of experiencing a happy and enjoyable time of motherhood, are exposed to violence by their spouse or relatives.¹⁷

The WHO has reported the prevalence of violence against women worldwide to be approximately 30% while the prevalence of violence during pregnancy increases the possibility of adverse pregnancy outcomes.¹⁷ According to a review conducted in 2021, the prevalence of domestic violence during pregnancy was reported at 1.6%-78%. Meanwhile, in Iran, the average domestic violence among pregnant women is reported to be more than 60%.¹⁸ This figure shows that the prevalence of domestic violence during pregnancy is higher than other common pregnancy problems such as pre-eclampsia and diabetes in Iran based on a systematic and meta-analysis study.¹⁷ Recent studies show that in general, 4%-37% of women are subjected to violence during pregnancy, and a significant number of them did not have this experience before pregnancy. Based on the results of these studies, violence during pregnancy causes adverse effects on women's physical, sexual, reproductive, and mental health and pregnancy outcomes.¹⁹

The experience of pregnancy is one of the factors that plays an important role in the general health of pregnant

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selected women and during the same phone call, checked the women in terms of inclusion and exclusion criteria and if they were eligible to enter the research, provided them with information about the research, how it was conducted, and the confidentiality of the information, and suggested they participate in the study. If she agreed, she was requested to be present at the health centre at a certain time. In a face-to-face visit, informed written consent to participate in the research was obtained from the participant, and the data collection tool was completed through interviews. It should be noted that in cases of severe violence, women were referred for intervention measures.

Data collection tool

The data collection tools in this study were the sociodemographic and obstetric characteristics questionnaire, the WHO domestic violence questionnaire, the Pregnancy Symptom Inventory (PSI) and the Pregnancy Experience Scale (PES).

The WHO Domestic Violence Questionnaire²³ assesses the violence perpetrated by the spouse in three areas, including physical, sexual and emotional aspects, with 10, 5, and 11 items, respectively. The types of violence are obtained based on a five-level Likert scale. If a woman gives at least one positive answer to each of the questions related to physical, sexual or emotional violence, she is considered to be subjected to violence. Women who chose 'never' were those who had not experienced violence. Women who had experienced violence once or twice were included in the 'mild violence' group, while women who mentioned violence 3-5 times were included in the 'moderate violence' group, and finally, women who had experienced violence more than five times were classified in the 'severe violence' group. The validity of the questionnaire in Iran has been confirmed by Naghizadeh *et al*²⁴ and Cronbach's alpha for the three areas of physical, psychological and sexual violence was reported as 0.70, 0.78 and 0.79, respectively. The Persian version of this questionnaire is available as online supplemental file.

The Pregnancy Symptom Inventory (PSI) contains 41 items and examines the frequency and intensity of symptoms and their impact on the life of the pregnant mother. Checking the frequency of symptoms was done using a 4-point Likert scale (0=never, 1=rarely, 2=sometimes and 3=often), and checking the impact of these symptoms on the daily life of the pregnant mother was done using a 3-point Likert scale (0=not limited at all, 1=slightly limited and 2=highly limited).⁶ This questionnaire has validity and reliability among Iranian pregnant women, so Ghanbari-Homaie showed a good fit for this questionnaire based on confirmatory factor analysis. In their study, Cronbach's alpha was 0.94 for frequency items and 0.95 for symptom severity items. The internal correlation coefficient for frequency items was between 0.58 and 1 and for symptom severity items between 0.73 and 1.25

The PES is a short version of the PES, which was designed in 2008 by DiPietro, a professor in the Department of

Family Population and Reproductive Health at Johns Hopkins University. This questionnaire has 20 items in the two areas of feeling happiness and worry during pregnancy: 10 items are based on worry (how much does each item cause the pregnant mother to worry?) and 10 items focus on happiness during pregnancy (how much does each item make the expectant mother happy?). In this scale, for each item, a 4-point Likert scale was considered, from 'not at all' to 'very much', which assigned a score of 0–3, respectively, so that a higher score indicates $\[\] \$ more worry or happiness.²⁶ This questionnaire has been otected psychometrically evaluated in Iran and has good reliability (Cronbach's alpha=0.71; intraclass correlation coeffiby copyright, cient=0.72) and validity (confirmatory factor analysis).²⁷

Sample size

The sample size was calculated as 277 based on the results of Naghizadeh et al's study²⁴ and using the ratio formula and considering p=32.8% related to the most common type of violence (emotional violence) and α =0.05 and d=0.05. Considering cluster sampling and a design effect of 1.5, the final sample size was calculated as 415 people.

Data analysis

Data analysis was done by using SPSS statistical software (V.21). Descriptive statistics, including frequency distribution as well as central and dispersion indicators such as mean and SD, were used to describe violence, pregnancy symptoms and pregnancy experience. The normality of the quantitative data was measured using skewness and Ă kurtosis, and all items had a normal distribution. Descriptive statistics, including frequency and percentage, mean and SD, and analytical statistics, were used to analyse the data. To determine the relationship between violence and pregnancy symptoms and pregnancy experience, one-way analysis of variance test was used in bivariate analysis, and G ≥ a general linear model was used in multivariate analysis to control confounders. A p<0.05 was considered significant.

RESULTS

training, and 415 pregnant women participated in the study from late September to early December 2022. The mean (SD) age of the participants was 31.9 (7.4) years. Half of the women and more than half of their husbands had university education (47.4% vs 66.5%). Most of the women (64.8%) were housewives, and about half of the people (49.6%) lived in their personal homes, and the other half (50.4%) g. and more than half of their husbands had university were tenants. About two-thirds (68.2%) of women 8 reported the adequacy of household income as relatively sufficient. Half of the women (50.4%) were experiencing their second pregnancy, and about one-third of them (32.8%) reported the current pregnancy as unwanted. One-fifth (20%) of the women had participated in childbirth preparation classes (table 1).

Most of the participants stated that they experienced emotional violence (86.0%), physical violence (67.7%)and sexual violence (79.5%) (table 2).

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Table 1

Characteristics	N (%)*	Characteristics	N (%)
Age (year)		Body mass index	
Mean (SD)†	31.87 (7.4)	Mean (SD)†	27.04 (1.73)
Educational level		Spouse's educational level	
High school	18 (4.3)	Diploma	139 (33.5)
Diploma	200 (48.2)	University	276 (66.5)
University	197 (47.4)	Spouse job	
Job		Clerk	212 (51.1)
Housewife	269 (64.8)	Worker	75 (18.1)
Employed	146 (35.2)	Other‡	128 (30.8)
Residence		Income sufficiency	
Personal	206 (49.6)	Sufficient	33 (8.0)
Tenant	209 (50.4)	Relatively sufficient	283 (68.2)
History of smoking	63 (15.2)	Insufficient	99 (23.9)
History of alcohol consumption	2 (0.5)	Number of pregnancies (gravid)	
Gestational age		1	61 (14.7)
Mean (SD)	32.7 (2.9)	2	209 (50.4)
History of abortion	200 (48.2)	≥3	145 (34.9)
History of participation in birth preparation classes	83 (20)	Unwanted pregnancy	136 (32.8)
*Number (per cent). †All numbers represent number (per cent) unless otherwise ‡Others include occupations such as construction, painter	e indicated. , agriculture, etc.		

Based on the unadjusted general linear model, there was a significant relationship between physical, sexual, and emotional violence, history of smoking, and history of participation in birth preparation classes with pregnancy symptoms (p < 0.05). Based on the adjusted general linear model and with the adjustment of sociodemographic and obstetric characteristics, the mean score of pregnancy symptoms in women who experienced physical violence (mild (B=2.56; 95% CI 1.54 to 3.58; p<0.001), moderate (B=5.49; 95% CI 4.18 to 6.80, p<0.001)); sexual violence (mild (B=9.55; 95% CI 8.36 to 10.74; p<0.001), moderate (B=13.23; 95% CI 10.74 to 15.72; p<0.001) and severe (B=24.38; 95% CI 21.75 to 27.02; p<0.001)); emotional violence (mild (B=8.75; 95% CI 7.63 to 9.86; p<0.001), moderate (B=12.15; 95% CI 10.64 to 13.67; p<0.001) and severe (B=19.89; 95% CI 18.32 to 21.47; p<0.001)) was significantly higher than women without experience of violence. Also, the mean score of pregnancy symptoms in women with a history of smoking (B=1.87; 95% CI 1.16 to 1.87; p<0.001) was significantly higher than women a mir without a history of smoking. Finally, the mean score of pregnancy symptoms in women with a history of participating in childbirth preparation classes (B=-3.45; 95% CI -4.64 to -2.25; p<0.001) was significantly less than women without a history of attending classes, and they were able to predict 93.8% of the variance of pregnancy symptoms (table 3). anc

Based on the unadjusted general linear model, there was a significant relationship between physical violence, sexual violence, emotional violence, women's education, number of pregnancies, unwanted pregnancy and technologies. history of participation in birth preparation classes with

Table 2 Frequency of types of domestic violence and its severity among pregnant women referring to Urmia health centres (n=415)

Type of violence	Number (per cent)	Type of violence	Number (per cent)	Type of violence	Number (per cent)
Emotional		Sexual		Physical	
No	57 (14.0)	No	85 (20.5)	No	134 (32.3)
Yes	357 (86.0)	Yes	330 (79.5)	Yes	281 (67.7)
Mild	113 (27.2)	Mild	74 (17.8)	Mild	177 (42.7)
Moderate	88 (21.2)	Moderate	218 (52.5)	Moderate	104 (25.1)
Severe	156 (37.6)	Severe	38 (9.2)	Severe	-

centres based on the general linear model (n=415)					
	Unadjusted		Adjusted		
Variable	β (95% CI) *	P value	β (95% CI) *	P value	
Physical violence (reference: without	out domestic violence)				
Mild	16.93 (15.06 to 18.81)	<0.001	2.56 (1.54 to 3.58)	< 0.001	
Moderate	39.96 (30.46 to 35.47)	<0.001	5.49 (4.18 to 6.80)	<0.001	
Sexual violence (reference: without domestic violence)					
Mild	4.67 (1.59 to 7.75)	0.003	9.55 (8.36 to 10.74)	< 0.001	
Moderate	13.23 (10.74 to 15.72)	<0.001	13.23 (1074 to 15.72)	< 0.001	
Severe	32.56 (28.10 to 37.02)	<0.001	24.38 (21.75 to 27.02)	<0.001	
Emotional violence (reference: with	nout domestic violence)				
Mild	3.36 (0.26 to 4.46)	0.034	8.75 (7.63 to 9.86)	<0.001	
Moderate	7.15 (3.34 to 10.97)	<0.001	12.15 (10.64 to 13.67)	<0.001	
Severe	20.33 (16.59 to 24.09)	<0.001	19.89 (18.32 to 21.47)	<0.001	
History of smoking (reference: no)					
Yes	17.10 (13.60 to 20.60)	<0.001	1.87 (1.16 to 2.58)	<0.001	
History of abortion (yes)					
No	-23.74 (-25.46 to -22.01)	<0.001	-0.27 (-2.49 to 2.44)	0.983	
History of participation in birth preparation classes (reference: no)					
Yes	-26.96 (-29.25 to -24.66)	<0.001	-3.45 (-4.64 to -2.25)	<0.001	
Adjusted R ² =0.877. *95% Cl					

Table 3 Relationship between pregnancy symptoms and domestic violence in pregnant women referring to Urmia health centres based on the general linear model (n=415)

Based on the unadjusted general linear model, there was a significant relationship between physical violence, sexual violence, emotional violence, place of residence, income sufficiency, history of smoking, unwanted

Protected by copyright, including for uses related to text and pregnancy, number of pregnancies and history of participation in birth preparation classes with the pregnancy data worries score (p>0.05). Based on the adjusted general linear model and by adjusting other variables, the mean score of worries in women with sexual violence experience (mild (B=1.93; 95% CI -3.01 to -0.84; p<0.001), moderate ≥ (B=1.81; 95% CI -3.21 to -0.40, p=0.012)), emotional training, violence (mild (B=2.82; 95% CI 1.87 to 3.78; p<0.001), moderate (B=3.31; 95% CI 2.07 to 4.55; p<0.001) and severe (B=3.53; 95% CI 2.24 to 4.81; p<0.001)) was significantly higher than women without experiencing violence. Also, the mean score of worry in women living in personal homes (B=-0.39; 95% CI -0.75 to -0.03; p=0.034) was significantly lower than women living in rental houses. In smoking women (B=1.04; 95% CI 0.39 to 1.68; p=0.002) was higher than non-smoking women; in nulliparous hnol women (B=1.75; 95% CI 1.05 to 2.46; p<0.001) and history of two pregnancies (B=0.84; 95% CI 0.34 to 1.35; **B** p=0.001) was higher than women with history of three or **g** more pregnancies; in women with unwanted pregnancy (B=-0.34; 95% CI -0.83 to 0.14; p=0.166) was lower than women with wanted pregnancy. In women with sufficient income (B=-0.38; 95% CI -1.12 to 0.35; p=0.303) and relatively sufficient income (B=-0.23; 95% CI -0.65 to 0.18; p=0.267) was lower than women with insufficient income level, and in women with a history of participating in childbirth preparation classes (B=-2.48; 95% CI -3.58 to -1.81; p<0.001) was significantly lower than women

the mean pregnancy happiness score (p<0.001). Based on the adjusted general linear model and by adjusting other variables, the mean score of happiness during pregnancy in women who experienced physical violence (mild (B=1.34; 95% CI -0.21 to 2.90; p=0.090), moderate (B=-2.60; 95% CI 0.59 to 4.60, p=0.011)) and women with emotional violence experience (mild (B=-5.87; 95% CI -7.33 to -4.41; p<0.001), moderate (B=-3.31; 95% CI -1.04 to -1.19; p=0.002) and severe (B=4.78; 95% CI -6.97 to -2.60; p<0.001)) was significantly lower than women without experiencing violence. Also, the mean score of happiness in women with unwanted pregnancies (B=-7.29; 95% CI -8.06 to -6.51; p<0.001) was significantly lower than that in women with wanted pregnancies; in nulliparous women (B=2.66; 95% CI 1.58 to 3.75; p<0.001) and in women with a history of two pregnancies (B=2.26; 95% CI 1.43 to 3.09; p<0.001) was significantly higher than that of women with a history of three or more pregnancies. Also, in women with a history of participation in childbirth preparation classes (B=5.49; 95% CI 3.65 to 7.33; p<0.001) was significantly higher than women without a history of participation in preparation classes for childbirth, and they were able to predict 76% of the variance of pregnancy happiness (table 4).

	Unadjusted		Adjusted		
Variable	β (95% CI)*	P value	β (95% CI)*	P value	
Physical violence (reference	ce: without domestic violence)				
Mild	-6.47 (-7.73 to -5.21)	<0.001	1.34 (-0.21 to 2.90)	0.090	
Moderate	-7.75 (-9.18 to -6.31)	<0.001	-2.60 (0.59 to 4.60)	0.011	
Sexual violence (reference: without domestic violence)					
Mild	-8.67 (-10.26 to -7.13)	<0.001	1.88 (-0.06 to 3.83)	0.058	
Moderate	-10.37 (-11.63 to -9.11)	<0.001	-0.72 (-3.24 to 1.80)	0.576	
Severe	-10.95 (-12.87 to -9.03)	<0.001	-2.11 (-4.97 to 0.75)	0.148	
Emotional violence (referen	nce: without domestic violence)				
Mild	-9.53 (-11.09 to -7.98)	<0.001	-5.87 (-7.33 to -4.41)	<0.001	
Moderate	-9.07 (-14.70 to -7.45)	<0.001	-3.31 (-1.04 to -1.19)	0.002	
Severe	-13.33 (-14.80 to -11.85)	<0.001	-4.78 (-6.97 to -2.60)	<0.001	
Education (reference: university)					
High school	-0.97 (-4.09 to 2.15)	0.542	-0.91 (-2.43 to 0.62)	0.243	
Diploma	-1.500 (-2.77 to -0.23)	0.021	-0.42 (-1.04 to 0.20)	0.182	
Unwanted pregnancy (reference: no)					
Yes	-9.85 (-10.79 to -8.92)	<0.001	-7.59 (-8.40 to -6.77)	<0.001	
Number of pregnancies (reference: ≥3)					
1	7.36 (5.56 to 9.16)	<0.001	2.66 (1.58 to 3.75)	<0.001	
2	3.75 (2.48 to 5.02)	<0.001	2.26 (1.43 to 309)	<0.001	
History of participation in birth preparation classes (reference: no)					
Yes	9.65 (8.35 to 10.91)	<0.001	5.49 (3.65 to 7.33)	< 0.001	
Adjusted R ² =0.760.					

Relationship between sociodemographic characteristics and pregnancy happiness in pregnant women referring to Table 4 Urmia health centres based on the general linear model (n=415)

*95% CI.

without history of participating in childbirth preparation classes, and these variables could predict 50.2% of the variance of pregnancy worries (table 5).

DISCUSSION

The present study was the first research conducted regarding the relationship between violence, pregnancy symptoms and pregnancy experience in Iran. The frequency of emotional violence, physical violence and sexual violence was 86.0%, 67.7% and 79.5%, respectively. In terms of pregnancy symptoms and pregnancy experience, there was a statistically significant difference among pregnant women with different intensities of violence. Also, the variables of physical violence, sexual violence, emotional violence, history of smoking and history of participation in childbirth preparation classes had a significant relationship with the score of pregnancy symptoms. The variables of physical violence, emotional violence, number of pregnancies, unwanted pregnancy and history of participation in childbirth preparation classes had a significant relationship with the pregnancy happiness score, and the variables of sexual violence, emotional violence, place of residence, number of pregnancies, history of smoking and history of participation in birth preparation classes had a significant relationship with the pregnancy worries score.

The results of this study showed that more than twothirds of pregnant mothers are subject to domestic violence, which is in agreement with the study of Tavoli et al^{28} who reported the prevalence of violence at 64.8%, and Bahrami-Vazir *et al*²⁹ who reported it at 67%. While it is not consistent with the study of Gharacheh *et al*^{β 0} who reported the frequency of this type of violence based on the Abuse Assessment Screen questionnaire as 44.5%. The possible reason for this inconsistency may be due to Gharacheh et al examined prenatal violence in women who were 8 weeks post partum, and the mothers in their study may have had recall bias, whereas in our study, pregnant women with a gestational age of at least 20 weeks were examined, which can better show the level of violence inflicted on them. Also, this difference can be caused by the difference in the measurement tools for domestic violence in two studies.

In our study, the score of pregnancy symptoms increased with the increase in violence, which is in agreement with the study of Gürkan *et al*^{a1} who, in a cross-sectional study,

Table 5	Relationship between sociodemographic characteristics and pregnancy worries in pregnant women referring to
Urmia he	ealth centres based on the general linear model (n=415)

	5	/				
	Unadjusted		Adjusted			
Variable	β (95% CI)*	P value	β (95% CI)*	P value		
Physical violence (reference: without domestic violence)						
Mild	1.92 (1.43 to 2.42)	<0.001	0.34 (–0.54 to 1.22)	0.448		
Moderate	3.41 (2.85 to 3.98)	<0.001	-0.13 (-1.22 to 0.96)	0.810		
Sexual violence (reference: without domestic violence)						
Mild	1.84 (1.20 to 2.47)	<0.001	1.93 (-3.01 to -0.84)	0.001		
Moderate	2.95 (2.39 to 3.50)	<0.001	1.81 (-3.21 to -0.40)	0.012		
Severe	6.02 (5.22 to 6.83)	<0.001	1.34 (-0.25 to 2.93)	0.099		
Emotional violence (reference	e: without domestic violence)					
Mild	3.32 (2.40 to 4.24)	<0.001	2.82 1.87 to 3.78)	<0.001		
Moderate	4.99 (4.03 to 5.96)	<0.001	3.31 (2.07 to 4.55)	<0.001		
Severe	5.43 (4.52 to 6.35)	<0.001	3.53 (2.24 to 4.81)	<0.001		
Residence (reference: tenant)						
Personal	–0.70 (–1.18 to –0.22)	0.004	–0.39 (–0.75 to –0.03)	0.034		
Income sufficiency (reference	e: insufficient)					
Sufficient	-1.25 (-2.24 to -0.27)	0.013	-0.38 (-1.12 to 0.35)	0.303		
Fairly sufficient	-0.41 (-0.98 to 0.16)	0.161	-0.23 (-0.65 to 0.18)	0.267		
History of smoking (reference: no)						
Yes	2.15 (1.51 to 2.79)	<0.001	1.04 (0.39 to 1.68)	0.002		
Unwanted pregnancy (reference: no)						
Yes	0.71 (0.20 to 1.22)	0.007	-0.34 (-0.83 to 0.14)	0.166		
Number of pregnancies (gravid) (reference: ≥3)						
1	0.89 (0.15 to 1.64)	0.019	1.75 (1.05 to 2.46)	<0.001		
2	0.49 (-0.04 to 1.02)	0.068	0.84 (0.34 to 1.35)	0.001		
History of participation in birth preparation classes (reference: no)						
Yes	-3.10 (-3.63 to -2.58)	<0.001	-2.48 (-3.58 to -1.81)	<0.001		
Adjusted B ² =0.502						

*95% CI.

compared pregnancy symptoms in pregnant women who were subjected to violence and women who were not. Domestic violence is an important stress factor during pregnancy. As the stress level increases, adrenal hormones begin to be secreted at high levels. Continuous stress causes physiological reactions in the mother, which causes adverse health effects. Stress leads to the weakening of the immune system and cardiovascular, digestive and nervous system problems.³² Women who suffer from domestic violence show more symptoms related to digestive, cardiovascular, nervous, urinary and mental health problems.³³ Studies have shown that anxiety and depression during pregnancy are more influenced by factors outside of pregnancy than by factors related to pregnancy,³⁴ and women exposed to domestic violence during pregnancy experience higher levels of stress, anxiety and depression than those who are not victims of domestic violence.^{35 36} Researchers reported in a study that pregnant women with anxiety or depression complain more

about physical and psychophysical symptoms (nausea, stomach pain, headache, shortness of breath, digestive symptoms, palpitations and dizziness) than those who do not suffer from these problems.³⁷

The results of our research showed that there is a significant relationship between domestic violence and pregnancy experience in women, so that with the increase in violence, mothers' worries increased and their happiness from pregnancy decreased. These results were consistent with the results of two cross-sectional studies from Brazil (2020) and Ethiopia (2019), which were conducted on 330 and 612 pregnant women, respectively, in which the significant relationship between physical and emotional violence and unwanted pregnancy and the mental happiness of pregnancy is pointed out.^{16 38} The experience of pregnancy has been considered a psychological factor in pregnancy, so that women may consider pregnancy not only as a source of happiness, but it can also be a period that brings them adverse psychological effects

such as anxiety.³⁹ More than 50% of pregnant women are somewhat anxious.²⁷ Previous research has reported the prevalence of fear and anxiety about childbirth in the countries of England, Iran, Sweden, Hong Kong, Portugal, Denmark and Spain ranging from 14% to 54%.⁴⁰⁻⁴³ The mental health of pregnant women is one of the most important factors during pregnancy that can affect the development of the fetus and children.

Worry and anxiety during pregnancy have negative physical and psychological health consequences for pregnant women. Previous studies suggest that these worries may lead to mother-infant relationship disorder, increased physical problems and antenatal and postpartum depression.^{2³ 5} Meanwhile, domestic violence as one of the public concerns has adverse effects on pregnancy outcomes. Considering the above results and the negative effects of violence on the mental happiness of pregnant women, and considering the fact that violence against pregnant women and the negative experiences of these women can damage the primary relationship between mother and child in some way, it is possible to develop health guidelines, implement educational and intervention programmes, and screen mothers during pregnancy in terms of exposure to any violence so as to improve the happiness and joy of women's pregnancy period and achieve a lasting experience from this period.

The results of the present study showed that there is a significant relationship between smoking history and participation in childbirth preparation classes and pregnancy symptoms so that mothers who had a history of smoking or did not participate in childbirth preparation classes experienced more pregnancy symptoms. In terms of the relationship between smoking and the occurrence of pregnancy symptoms, the results of the present study are consistent with the study of Soto Balbuena *et al*⁴⁴ who found in a longitudinal study that the occurrence of pregnancy symptoms such as anxiety increases with the increase in smoking during pregnancy. Also, the results of the present study are consistent with the study of Weng et al⁴⁵ in Taipei and Taiwan, who found that exposure to cigarette smoke during pregnancy and smoking in pregnant mothers increases the chance of depression symptoms. In relation to participation in childbirth preparation classes and the occurrence of pregnancy symptoms, the results of our study were also consistent with a mixed methods study in England (2019) that examines the history of participation of pregnant mothers in childbirth preparation classes and the presence of a midwife. In fact, one of the goals of childbirth preparation classes is to educate pregnant women about changes and symptoms during pregnancy. By participating in these classes, women will have an opportunity to increase their knowledge and correct false information about pregnancy and childbirth, which leads to worry and the occurrence of more and more adverse pregnancy symptoms in them.⁴⁶ Also, it allows them to meet other people who are the same situation as them, which increases their self-confidence.⁴⁷ In fact, these classes increase women's

awareness of pregnancy symptoms and their needs and their better understanding of the birthing process, and this will reduce the incidence of pregnancy symptoms. Therefore, paying attention to these classes, formulating and implementing more programmes, and enriching the classes may have positive effects on reducing the incidence of pregnancy symptoms, reducing unnecessary referrals and reducing healthcare costs. Therefore, according to the results, there is a need to take measures such as informing women and mothers about the effects of smoking abuse on the fetus and baby and changing the attitude of pregnant women towards participating in birth preparation classes in order to better face the birth process and control symptoms of pregnancy.

In this study, there was also a significant relationship between the number of pregnancies, unwanted pregnancies and history of participation in childbirth preparation classes and the pregnancy happiness score. In this regard, a review and meta-analysis study in Ethiopia in 2022 on 13912 data from 26 studies has reached consistent results with the present study in such a way that it has shown a significant relationship between the number of pregnancies and unwanted pregnancies and happiness during pregnancy.⁴⁸ In the Nojomi and Akrami⁴⁹ study, the reason for not seeking prenatal care on time and unwanted pregnancy was more in women who were subjected to domestic violence. In another study by Goodwin,⁵⁰ the rate of violence against pregnant women in unwanted pregnancies was 2.5 times that of women without violence, which is consistent with the results of the present study. Also, a cross-sectional study in Poland (2020) on 234 pregnant women indicated consistent results with the present study, which indicated a significant relationship between women's history of participation in childbirth preparation classes and their pregnancy happiness score.¹

The results of this study also showed a significant relationship between residence, number of pregnancies, history of smoking, and history of participation in birth preparation classes and the pregnancy worry score. In this regard, the results of a review study and meta-analysis of Ethiopia (2022) were in line with the results of the present study, in which the number of pregnancies and the history of participation in childbirth preparation classes were pointed out to have a significant relationship with women's concerns during pregnancy.48 A longitudinal study in Spain (2011) on 285 pregnant women also had similar results to the results of the present study, which **a** showed the relationship between smoking and pregnancy **g** worry.⁵¹ In addition to the results of the reported studies, a study found a significant relationship between the residence variable and the pregnancy worry score. This may be due to the fact that mothers' living in their own homes has improved the mothers' experience of pregnancy by reducing their worries.

Among the strengths of the current study, we can mention the random sampling, which increases the generalisability of the study results. Also, the innovation of the

study in examining the relationship between domestic violence and pregnancy symptoms and pregnancy experience, considering the lack of availability of a similar study in the existing literature, is another strength of the study. The cross-sectional nature of this study is one of its limitations because the relationships shown do not exactly express the cause-and-effect relationship. Since cultural influences may be one of the factors affecting domestic violence, it is recommended that a study on this topic be investigated in different cultures. It is recommended that future studies investigate the possible consequences of various types of violence during pregnancy.

CONCLUSION

According to the results of the present study, it seems that the prevalence of domestic violence during pregnancy is not in a favourable situation. Considering the relationship of violence with pregnancy symptoms and experiences, it is necessary to adopt appropriate intervention strategies to prevent violence in pregnant women in order to improve the symptoms and experiences of the pregnancy.

On the other hand, considering the impact of sociodemographic factors such as smoking history, participation in birth preparation classes, the number of pregnancies and whether the pregnancy was wanted or not, on the symptoms of pregnancy and the experience of pregnancy, it is recommended that the concerned officials pay attention to this issue in the guidelines and instructions, considering the possible effects on the mother and fetus health and other dimensions of pregnancy.

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