

The Frequency and Severity of Nausea and Vomiting during Pregnancy and its Association with Psychosocial Health

Fatemeh Bazarganipour (PhD)¹, Hamid Mahmoodi (MA)², Beheshteh Shamsaee (MA)³, Seyed Abdolvahab Taghavi (PhD)^{1*}

¹ Assistant Professor, Hormozgan Fertility & Infertility Research Center, Hormozgan University of Medical Sciences, Bandarabbas, Iran

² Lecturer, Department of English Language, Hormozgan University of Medical Sciences, Bandarabbas, Iran

³ MA in Educational Management, Health Center, Hormozgan University of Medical Sciences, Bandarabbas, Iran

ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p>Background & aim: The present study aimed to evaluate the frequency and severity of nausea and vomiting during pregnancy (NVP) and to investigate the association between psychosocial health and the severity of NVP.</p>
<p><i>Article History:</i> Received: 05-Jan-2015 Accepted: 09-May-2015</p>	<p>Methods: This cross-sectional study was performed on 200 eligible pregnant women with nausea and vomiting at three prenatal care centers in Kashan, Iran. The participants completed demographic and pregnancy-related questionnaire, Beck Depression Inventory-Short Form, Winnfield Tiymann social support questionnaire and Paykel scale of stressful life events. the severity of NVP was also recorded. ANOVA and Kruskal-Wallis tests were used to determine the relationship between different variables. P-value less than 0.05 was considered statistically significant.</p>
<p><i>Key words:</i> Nausea and Vomiting Pregnancy Psychosocial Health</p>	<p>Results: The frequency of NVP was estimated at 71.5%. In total, 19%, 45.5% and 7% of these cases had mild, moderate and severe NVP, respectively. The severity of NVP was significantly associated with depression level (P=0.01). However, there was no correlation between the level of social support and unpleasant life events with severity of NVP.</p> <p>Conclusion: According to the results of this study women with more severe NVP experienced a higher level of depression, compared to others. However, social support and other factors were not correlated with the severity of NVP.</p>

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Introduction

Nausea and vomiting during pregnancy (NVP) is the most disturbing symptom in 80% of all pregnancies (1-3). The prevalence of mild, moderate and severe NVP has been reported to be 50-60.8%, 32-34% and 10.8-17%, respectively (4). Severe and prolonged NVP may result in hyperemesis gravidarum. Moreover, it may lead to maternal weight loss, severe dehydration, electrolyte imbalance and formation of ketones in urine (5).

Women, hospitalized due to NVP, do not experience a normal weight gain during pregnancy; this leads to low birth weight and intrauterine growth restriction (6-7). Moreover, the severity of NVP may affect the physical and emotional status of pregnant women and

influence their maternal role, as well as their quality of life (8-11).

According to World Health Organization (WHO), several factors including stressors, social relations, stressful life events, anxiety, depression and social support influence one's health (12). However, limited information is available regarding psychopathological factors, associated with pregnancy outcomes (13).

Stress is not evaluated during routine prenatal care. As a result, maternal stress level during pregnancy is undetermined and the associated effects on maternal health cannot be estimated. Overall, stress, anxiety and depression are associated with several diseases including cardiovascular, autoimmune and skin conditions (14).

* Corresponding author: Seyed Abdolvahab Taghavi, Assistant Professor, Hormozgan Fertility & Infertility Research Center, Hormozgan University of Medical Sciences, Bandarabbas, Iran. Email: vahab.taghavi@gmail.com

According to WHO, social support is a mediating factor, affecting one's emotional status (12). In fact, perceived social support is an individual's perception of the support received from the family, friends and others (15). Previous studies have shown that mortality rate decreases among people with an extended social network (16). It is believed that social support results in social adaptation, appropriate response to stressors, stress reduction and promotion of physical and psychological health (17-19).

According to the above-mentioned findings, prenatal care providers should be aware of predisposing factors for NVP in order to provide effective care and promote maternal and fetal health during pregnancy. However, the available data on the relationship between NVP and psychosocial health are controversial. In this regard, Kuo et al. (2007) reported that pregnant women with mild NVP had significantly lower stress, compared to pregnant women with severe NVP.

On the other hand, according to a previous study, social support and maternal psychosocial adaptation were not significantly correlated with the severity of NVP (20). However, these two studies reported that severe NVP, associated with high perceived stress, may be mediated by social support (21-22). Considering the mentioned points, the aim of this study was to evaluate the relationship between NVP and psychosocial health among Iranian women.

Materials and Methods

This cross-sectional study was conducted on all pregnant women, referring to three healthcare centers of Kashan, Iran during 2009-2010.

The inclusion criteria were as follows: 1) 19-45 years of age; 2) gestational age of 6-16 weeks; 3) singleton pregnancy; 4) being a Muslim; and 5) fluency in Persian language. The exclusion criteria were as follows: 1) use of medications during pregnancy other than supplements and multivitamins; 2) history of diagnosed chronic, infectious diseases; 3) prior history of conditions such as diabetes and abnormal blood pressure; and 4) history of complications such as haemorrhage and uterine contractions.

In this study, convenience sampling method was applied. Consent forms were obtained from eligible participants. The subjects were justified about the purpose and method of the study and were ensured about the confidentiality of the findings. Finally, qualified and eligible women, who agreed to complete the questionnaires, were introduced to the study.

Demographic and pregnancy-related characteristics including age, spouse's educational level, gestational age, gravidity, history of abortion and pregnancy planning (planned or unintended) were collected. In this study, years of formal education were considered as a measure of socioeconomic status. In fact, previous studies conducted in Iran have shown that educational level could be an appropriate measure for evaluating the socioeconomic status of Iranians (23).

Beck Depression Inventory-Short Form (BDI-SF) (13 questions), which is a comprehensive and reliable tool for depression evaluation, was applied in this study. Psychometric properties of BDI have been verified in Iranian population (24). In the present study, the score of nine or higher was considered as a sign of depression.

The severity of NVP was classified as mild (no interference with one's activity level or concentration), moderate (sometimes interfering with one's activity or concentration) and severe (inability in performing activities or concentration) (25).

Social support was evaluated, using Winnfield Tiyygmann's social support scale, which has been adjusted with regard to Iranian culture. The validity and reliability of this questionnaire have been previously confirmed. This scale consists of 16 items including 10 questions, graded as "high", "moderate" and "low". According to the participant's responses, the scores range from 0 to 3; the total score is the sum of scores for each question. In this study, based on the obtained scores, the subjects were divided into three groups: low social support (score 0-10), moderate social support (score 11-20) and high social support (score 21-30). The second part of the questionnaire (6 items) is concerned with postpartum social support (yes/no) (26-27). This section was omitted

since the participants in the present study were pregnant women.

Paykel scale of stressful life events was used for evaluating the events over the last year. The validity and reliability of this scale have been previously confirmed. For this purpose, Tomyians et al. selected 51 items out of 69 events, which were found to be adaptable in our country; in this study, these events were considered, as well (27).

Data were presented as number and percentage, unless otherwise indicated. Group comparisons were carried out, using ANOVA and Kruskal-Wallis tests if necessary. Multiple linear regression test was applied to identify variables which contributed to the variability of NVP severity. P-value less than 0.05 was considered statistically significant. Statistical analysis was performed, using SPSS version 21.0 (SPSS Inc., Chicago, IL, USA).

This study was approved by the Ethics Committee of Kashan University of Medical Sciences.

Results

Socio-demographic characteristics

Overall, 200 pregnant women were included in this study over one year. The mean (SD) age of participants and gestational age were 25.1 ± 5.5 years and 140.06 ± 37.90 days, respectively. The majority of women had no academic education ($n=158$, 79%). The participants' socio-demographic characteristics and pregnancy history are presented in Table 1.

The prevalence of NVP was estimated at 71.5%. Overall, 105 cases (52.5%) presented with moderate to severe NVP (Figure 1).

Psychosocial health status

Most pregnant women (54%) were reported to have moderate social support. Among the participants, 53% had experienced at least 1-3 unpleasant events over the past year. The prevalence of depression in the present study was 41% and the majority of subjects (27.5%) had mild depression (Table 1).

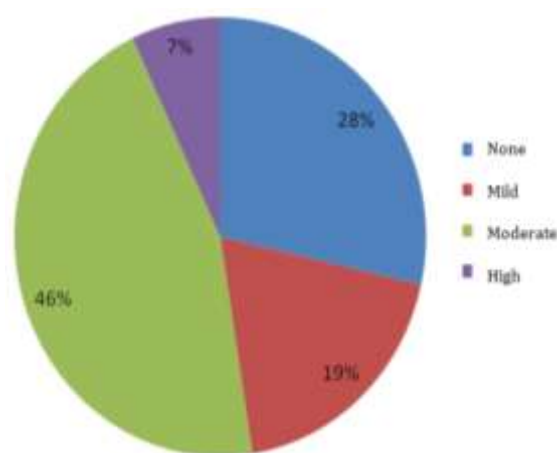


Figure 1. Frequency distribution of participants with different severities of NVP (n=200)

The impact of socio-demographic characteristics and psychosocial health on NVP

Table 1 shows the distribution of participants with different severities of NVP, based on demographic characteristics, depression level, unpleasant life events and social support. The obtained results showed a significant difference between the severity of NVP and depression score ($P=0.01$) (Table 2).

However, the severity of NVP was not correlated with the level of social support ($P=0.50$) or unpleasant life events ($P=0.28$). Moreover, according to multiple regression analysis, depression score was a significant predictor of NVP severity ($B=0.09$, 95% CI: 0.003-0.041, $P=0.02$).

Table 1. Socio-demographic and psychosocial characteristics of participants (n=200)

Demographic characteristics	
Age (years)	25.89±5.50
Mother's education	
Less than university education	158 (79.00)
Academic education	42 (21.00)
Partner's education	
Less than university education	162(81.00)
Academic education	38 (19.00)
Gravidity	1.85±1.05
Abortion	
Yes	162 (81.00)
No	38 (19.00)
Plan for pregnancy	
Yes	159 (79.50)
No	41 (20.50)
Gestational age (days)	140.06±37.90
Psychosocial health	
Depression status	
No	118 (59)
Mild	55 (27.5)
Moderate	22 (11)
Severe	5(2.5)
Social support status	
Low	26 (13)
Moderate	108(54)
Severe	65 (32.5)
Unpleasant life events	
0-6 events	191(95.5)
7-13 events	9 (4.5)

Table 2. Comparison of the severity of NVP and different variables (n=200)

Variables	Severity of NVP				P
	No	Mild	Moderate	Severe	
Age (years)	26.31±5.11	27.31±6.55	25.27±5.36	24.37±4.18	0.16
Gestational age (days)	131.05±58.85	154.05±63.37	174.05±60.70	109.21±50.33	0.28
Mother's education					
Less than university education	44 (77.2)	29 (76.3)	76 (83.5)	9 (64.3)	0.18
Academic education	13 (22.8)	9 (23.7)	15 (16.5)	5 (35.7)	
Spouse's education					
Less than university education	45 (78.9)	31 (81.6)	74 (81.3)	12 (85.7)	0.70
Academic education	12 (21.1)	7 (18.4)	17 (18.7)	2 (14.3)	
Gravidity	1.68±0.71	2.07±1.40	1.91±1.09	1.50±0.65	0.16
Plan for pregnancy					
No	7 (12.3)	12 (31.6)	20 (22)	2 (14.3)	0.13
Yes	50 (87.7)	26 (68.4)	71 (78)	12 (85.7)	
Abortion					
Yes	50 (87.7)	29 (76.3)	70 (76.9)	13 (92.9)	0.18
No	7 (12.3)	9 (23.7)	21 (23.1)	1 (7.1)	
Depression score	4.10±3.83	3.89±3.50	4.61±3.85	7.78±7.15	0.01
Social support					
Low	10 (17.5)	3 (8.10)	10 (11)	3 (3)	0.50
Moderate	31 (54.4)	21 (56.75)	49 (53.8)	7 (3.5)	
Severe	16 (28.1)	13 (35.13)	32 (35.2)	4 (2)	
Unpleasant life events	2.24±2.47	1.65±1.54	1.96±2.39	2.71±1.68	0.28

Quantitative and qualitative variables are presented as number (percentage) and mean±SD, respectively.

Discussion

In this study, the prevalence of NVP was estimated at 71.5%. In total, 19%, 45.5% and 7% of these cases had mild, moderate and severe NVP, respectively. In this regard, in a study by Chou et al. (2008) on Taiwanese pregnant women, the prevalence of mild, moderate and severe nausea was reported to be 28.8%, 36.2% and 12.3%, respectively (21); consistent with the present study, most of the participants had moderate NVP. Also, in a study by Soltani et al. (2004) on 700 pregnant women (during 6-16 weeks of pregnancy), the prevalence of NVP was reported to be 69.8% in Hamadan, Iran (28).

The results of the present study did not show a significant statistical relationship between maternal age and NVP, which was consistent with the findings reported by Norani Saaededin et al. (2003), who indicated no significant association between maternal age and NVP (29).

The etiology of NVP is multi-factorial and factors predisposing pregnant women to NVP have not been fully recognized. Unlike other studies reporting a relationship between NVP and maternal education (2-30), the present research did not indicate such an association. This finding was in accordance with two previous studies which suggested no correlation between NVP and educational level (31-32).

Our findings showed no significant association between the severity of NVP, unplanned pregnancy or abortion. These findings were in agreement with the results reported by Chou (2001) (1) and in contrast with the findings reported by FitzGerald, who concluded that women with an unplanned or undesired pregnancy tended to have a more severe NVP (32).

Individuals are physical, psychological beings and physiological factors play a considerable role in determining their health (33). The prevalence of depression was estimated at 41% in this study. The higher prevalence of depression in this study and previous research in Iran, compared to other countries, is noticeable. For instance, in a systematic review, the prevalence of depression during pregnancy was reported to be 6.5-12.9% during different trimesters (34).

The remarkable difference between the global prevalence of depression and the rate reported in Iran (in this study and previous research) may be

due to factors such as lifestyle differences in various regions, use of different depression tests and variations in the sample size.

Some studies have shown that the scores obtained by BDI are significantly higher than those attained by Edinburgh Depression Scale. The reason behind this difference lies in the greater number of questions related to the somatic aspect of depression in BDI, compared to Edinburgh scale. Therefore, due to the presence of multiple somatic disorders in pregnant women, depression may be misdiagnosed.

Some signs of depression such as sleep disorders, weight gain and energy reduction may be also present in a normal pregnancy, resulting in a complicated diagnosis of depression. Therefore, although Beck et al. suggested that a score of nine or higher is indicative of depression, it is recommended that a higher threshold be considered for pregnant women, since somatic signs in pregnant women can increase the obtained score in this test (35-36).

The present study showed that the higher level of depression was related to more severe symptoms of NVP. Also, women with severe or moderate nausea reported higher levels of depression, compared to those with mild nausea. These findings were consistent with the results reported by Swallow et al., who indicated that pregnant women with frequent nausea and vomiting experience more depression (37); this may be related to the feeling of loneliness and loss of control.

According to our findings, the severity of NVP was not correlated with social support or unpleasant life events. In this regard, Kuo et al. (2007) reported that pregnant women with mild NVP had a significantly lower stress level, compared to those with severe NVP. However, the severity of NVP was not significantly correlated with social support or maternal psychosocial adaptation (20). This finding differed from the results reported by two previous studies, which indicated that severe NVP, associated with high perceived stress level, may be mediated by social support (21-22).

The discrepancies between other studies and the present research may be due to differences in the cultural background of pregnant women, use of different tests for evaluating social support and unpleasant life events, and differences in the

sample size. Evaluation of different populations and settings in future might increase our understanding of this issue.

One of the limitations of the present study was the application of a cross-sectional method. Although this study explored a common problem among pregnant women and provided useful data on this subject, the possible statistical relationship cannot be confirmed. Moreover, use of convenience sampling method may limit the generalizability of our findings to the whole population of pregnant women.

Another limitation in this study was that although Beck questionnaire is valid and reliable for pregnant women, its validity and reliability have not been confirmed in case of NVP. Also, the limited sample size was another shortcoming of this study; this in turn limited the generalizability of the data. Finally, performing a longitudinal evaluation and precise control of subjects' mental status were not possible before pregnancy or after NVP. For a more thorough understanding of the relationship between psychosocial health and NVP, further research is recommended.

Conclusion

The findings of the present study provided a deeper understanding of the relationship between NVP and psychosocial status. The results showed that women with more severe NVP experienced a higher level of depression, whereas social support and unpleasant life events were not associated with the severity of NVP. Considering the importance of NVP and its relation with depression, further studies and application of accurate tools for estimating the prevalence of depression in pregnancy are recommended. Moreover, if this relationship is approved, the integration of mental health care and prenatal care programs is suggested. Also, more support should be provided for helping mothers cope with pregnancy problems. In addition, mothers should be trained on how to control these problems and improve their health and communication skills. Finally, the needs of mothers during pregnancy should be highlighted and those who are at greater risks and require further interventions should be identified.

Conflict of Interest

The authors declare no conflicts of interest.

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