

The Effects of Telephone Support on Stress and Perceived Social Support in Primiparous Women Experiencing Nausea and Vomiting in the First Half of Pregnancy

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ARTICLE INFO

Article type:
Original article

Article History:
Received: 21-Aug-2014
Accepted: 10-Jan-2015

Key words:
Nausea and Vomiting
Pregnancy
Social Support
Stress
Support

ABSTRACT

Background & aim: Gestational nausea and vomiting are positively correlated with stress and stress is negatively associated with social support. Due to advances in technology, telephone has become the most accessible device for home-based support. This study aimed to determine the effects of telephone support on stress and perceived social support in primiparous women experiencing nausea and vomiting during the first half of pregnancy.

Methods: This clinical trial was conducted on 60 healthy pregnant women suffering from mild nausea and vomiting in the first half of pregnancy. They were randomly assigned to intervention (n=30) and control (n=30) groups. The intervention group received social support twice a week for a period of four weeks. Each phone conversation lasted around 15-20 minutes. During these conversations, dietary and lifestyle changes during pregnancy, as well as ways to reduce fatigue and improve psycho-emotional status, were discussed. The control group received routine care. Data were collected using a demographic questionnaire, Multidimensional Scale of Perceived Social Support, and Visual Analogue Scale for stress. Independent t-test and paired test were performed, using SPSS version 16.

Results: No significant difference was found in the mean scores of stress in two groups at the beginning and end of the study (P=0.052). However, social support score at the beginning of the study was significantly different from that at the end of the study in both groups (P=0.036).

Conclusion: It is recommended that telephone support be integrated into the routine care of women with nausea and vomiting in order to improve their perceived social support and decrease their stress.

► Please cite this paper as:

Abedian Z, Abbaszadeh N, Latifnejad Roudsari R, Shakeri MT. The Effects of Telephone Support on Stress and Perceived Social Support in Primiparous Women Experiencing Nausea and Vomiting in the First Half of Pregnancy. Journal of Midwifery and Reproductive Health. 2015; 3(2): 328-334. DOI: 10.22038/jmrh.2015.3950

Introduction

Psychological distress is one of the most common complications in pregnant women (1). Gestational stress, in specific, is one of the most prevalent forms of distress, experienced by pregnant women, especially those presenting with symptoms such as nausea and vomiting (1, 2). In fact, nausea and vomiting commonly occur

in pregnant women (3). As statistics have indicated, some degree of nausea with or without vomiting occurs in 50-90% of all pregnancies (14).

The American College of Obstetricians and Gynecologists (2004) stated that maternal stressors and stress management skills can significantly affect the occurrence of gestational

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nausea and vomiting (6). On the other hand, according to previously conducted studies, gestational nausea and vomiting are correlated with stress. In this regard, Wang et al. (2008) reported a positive relationship between stress and gestational nausea and vomiting (8). In fact, women with more social support are less stressed during pregnancy (2).

Social support directly influences an individual's health and mediates the relationship between stressors and health status; in other words, despite the presence of stressors, social support can improve one's health (9). Consequently, gestational nausea and vomiting are expected to improve by reducing stress, following telephone support.

Unfortunately, health clinics are not the greatest place for providing social support, given the time limitations of health care providers (10). Therefore, telephone has been suggested as an alternative for providing social support (11). This device has considerable potentials and its use is rapidly growing due to its cost-effectiveness, accessibility, and not being limited by geographical barriers. In fact, several governmental and non-governmental organizations have applied telephone for their extensive interventions (12).

Health care providers have applied telephone in order to provide social support for patients with cancer, chronic diseases, and psychological diseases (13). Lieu et al. (2013) concluded that professional support including face-to-face interactions and social support decreases distress symptoms in women with nausea and vomiting during their first semester of pregnancy (14). However, Thompson et al. (2007) showed that telephone support, compared to home-based support, could not decrease perceived stress in Chinese women with dementia (15).

As previously stated, nausea and vomiting are common problems during pregnancy, which are correlated with stress. However, no study has been performed in Iran considering the effects of telephone support on stress in pregnant women. Therefore, we performed this study to determine the impact of telephone support on stress and perceived social support in primiparous women experiencing nausea and vomiting in the first half of pregnancy.

Materials and Methods

This two-group clinical trial was conducted on 60 primiparous women who met the inclusion criteria and were referred to the selected health care centers of Mashhad in 2013. The dropout rate was 15% in our study.

Multistage sampling was applied in our study. At first, public health clinics, affiliated to 5 major health care centers of Mashhad (No. 1, 2, 3, 4, and Samen), were listed and the number of clients was extracted. Then, four clinics affiliated to health care center No. 2 (with a higher patient coverage), three clinics of health care center No. 1, 3, and 5, and two clinics affiliated to Samen center were selected; the last two centers had high patient coverage, as well.

Afterwards, accessible sampling was applied, based on the research criteria. The inclusion criteria were as follows: 1) primiparity; 2) gestational age of 6-10 weeks; 3) willingness to participate in the study; 4) access to telephone; 5) nausea and vomiting, according to nausea and vomiting protocol in the "National safe Motherhood Program", confirmed by the researcher; 6) mild to moderate nausea and vomiting, based on the modified questionnaire of pregnancy-related nausea and vomiting; 7) no medical conditions during pregnancy such as migraine, urinary tract infections, peptic ulcers, chronic pulmonary, hepatic, renal, or cardiac failure, hyperthyroidism, cholecystic disease, diabetes mellitus, and hearing disorders; and 8) no history of receiving medical treatments or alternative therapies for nausea one week before the study.

If the subjects had warning signs of miscarriage or obtained scores above 7 in stress-related Visual Analogue Scale (VAS), they were excluded from the study.

Data were collected using a questionnaire of demographic data, obstetric information, psychological data, and gestational nausea and vomiting. Moreover, a checklist for recording telephone conversations (phone call checklist), the modified questionnaire of gestational nausea and vomiting, Multidimensional Scale of Perceived Social Support (MSPSS), and stress-related VAS were applied.

VAS is a 100-mm line for assessing stress level; the scores may range from 0 (no stress) to 100 (maximum stress). The subjects were asked

to mark their stress level on this line.

MSPSS is a 12-item self-report instrument with a 7-point Likert scale, ranging from strongly disagree to strongly agree (score range=1-7); the total score ranged between 12 and 84, with higher scores indicating more social support.

Content validity was applied for confirming the validity of demographic questionnaire (related to demographic data, psychological information, and gestational nausea and vomiting), phone call checklist, and the checklist related to the training of women with gestational nausea and vomiting.

Also, the validity of the modified questionnaire of gestational nausea and vomiting was confirmed by Lacasse et al. (2008) (16), using criterion validity ($r=0.71$). Berjot and Lesage (2011) (17) confirmed the validity of VAS, using criterion validity and perceived stress scale ($r=0.68$). Also, the validity of MSPSS was confirmed by Salimi et al. (2008), using factor analysis.

The reliability of phone call checklist ($r=0.95$), demographic questionnaire (including demographic data, obstetric information, psychological data, and gestational nausea and vomiting), the modified questionnaire of gestational nausea and vomiting, and VAS was confirmed by inter-rater reliability ($r=0.95, 0.87, 0.91, \text{ and } 0.92$, respectively). Also, the reliability of MSPSS was confirmed by Cronbach's alpha ($\alpha=0.89$).

Eligible subjects, referring to the selected health clinics, received health care services for nausea and vomiting, based on the National Safe Motherhood Program (Integrated Health Care for Mothers).

If the subjects were diagnosed with gestational nausea and vomiting, the quantitative questionnaire of gestational nausea and vomiting was completed via interview. If the subjects had mild to moderate nausea and vomiting, they were introduced to the study and trained using a checklist, which was prepared based on the protocol for nausea and vomiting in Safe Motherhood Program. Afterwards, informed consents were obtained from the subjects and the demographic questionnaire, MSPSS, and VSA were completed for them.

The subjects were randomly assigned to intervention and control groups by a coin. The intervention group was provided with phone support twice a week (8 sessions) for a period of four weeks; each session lasted 15-20 minutes. The content of sessions included dietary and lifestyle changes and strategies for reducing fatigue and improving psychological status.

At the end of each session, the subjects were given time to ask any related questions, express their concerns, and discuss their pregnancy-related stress. All their questions were answered and in case they were anxious or stressed about their pregnancy, they were trained to reduce their stress and anxiety. If they experienced nausea and vomiting, they could call the researcher from 8 a.m. until 8 p.m.

The content of phone conversations was recorded in previously-prepared forms. The control group received no interventions. After four weeks, VAS and MSPSS were completed in a face-to-face interview.

For data analysis, Chi-square, independent t-test, Wilcoxon test, and Mann-Whitney U test were performed, using SPSS version 16.

Results

In total, four individuals did not complete the questionnaires at the end of the study; therefore, the data related to 60 subjects were analyzed. Tables 1 and 2 demonstrate that the two groups were similar in terms of demographic data, obstetric information, psychological data, and gestational nausea and vomiting at the beginning of the study ($P>0.05$). Also, independent t-test showed no significant difference in the mean score of stress between the two groups at the beginning of the study ($P=0.417$). In addition, no significant difference was found between the two groups at the end of the study in terms of stress ($P=0.237$).

Paired t-test results showed no significant difference in the stress scores of the control group at the beginning and end of the study ($P=0.109$). However, the stress score of the intervention group at the beginning of the study was significantly different from that reported at the end of the study ($P<0.001$); in fact, the stress score of the intervention group at the end of the study was higher than that reported at the beginning of the study. The two groups showed

Table 1. Frequency distribution of family's monthly income and subjects' occupational status and educational level in the two groups

Variables	Intervention	Control	Fisher's exact test and Mann-Whitney test results
	N (%)	N (%)	
Subjects' occupational status			
Housewife	30(100.0)	27(90.0)	P=0.353
University student	0(0)	2(6.7)	
Employee	0(0)	1(3.3)	
Subjects' educational level			
Illiterate	0(0)	0(0)	P=0.149
Primary level education	7(23.3)	2(6.7)	
Junior high school	10(33.3)	7(23.3)	Z=2.390
High school diploma	12(40.0)	17(56.7)	U=300.000
Academic education	1(3.3)	4(13.3)	
Monthly income of the family			
Less than sufficient	3(10.0)	3(10.0)	P=0.748
Sufficient	25(83.3)	26(86.7)	Z=0.322
More than sufficient	2(6.7)	1(3.3)	U=436.500

Table 2. Comparison of mean and standard deviation of subjects' age, gestational age, and BMI at the beginning of the study in the two groups

Variables	Intervention	Control	Independent t-test results
	Mean±SD	Mean±SD	
Subjects' age (year)	22.300±3.869	22.266±3.139	t=0.370 P=0.971
Gestational age (week)	8.990±1.283	9.036±1.396	t=0.135 P=0.893
BMI	23.113±4.676	21.912±3.266	t=1.152 P=0.254

Table 3. Comparison of mean stress scores in the intervention and control groups at the beginning and end of the study

Groups Stress	Intervention	Control	Independent t-test results
	Mean±SD	Mean±SD	
At the beginning of the study	4.410±1.712	3.836±2.256	P=0.417 t=0.818
At the end of the study	2.626±1.686	3.223±2.155	P=0.237 t=0.194
The difference between the beginning and end of the study	-1.606±1.91	-0.603±1.99	P=0.052 t=1.986
Paired t-test results	P<0.001 t=4.595	P=0.109 t=1.655	

no significant difference in terms of the mean score of stress at the beginning or end of the study (P=0.052) (Table 3).

Paired t-test results showed no significant difference in the social support of intervention and control groups at the beginning of the study (P=0.266). However, a significant difference was found in the social support score of the intervention and control groups at the end of

the study (P=0.001). Paired t-test showed no significant difference in social support scores of the control group at the beginning and end of the study (P=0.149).

Paired t-test results also showed no significant difference in the social support scores of the intervention group at the beginning and end of the study (P=0.128). The two groups were significantly different in the mean score of social

support at the beginning and end of the study (P=0.036). Also, the mean difference of social support at the beginning and end of the study

was more significant in the intervention group, compared to the control group (Table 4).

Table 4. Comparison of the mean score of perceived social support between the intervention and control groups at the beginning and end of the study

Variables		Intervention Mean±SD	Control Mean±SD	Independent t-test results
Social support	At the beginning of the study	65.733±12.632	62.266±11.261	P=0.266 t=1.122
	At the end of the study	68.533±8.850	60.100±10.172	P=0.001 t=3.426
	The difference between the beginning and end of the study	2.800±9.778	-2.166±8.013	P=0.036 t=2.152
Paired t-test results		P=0.128 t=-1.568	P=0.149 t=-1.481	

Discussion

This study was conducted to determine the effect of telephone support on stress and perceived social support in primiparous women experiencing nausea and vomiting in the first half of pregnancy. According to the findings, no significant difference was found between the two groups at the beginning of the study in terms of perceived social support, which was evaluated by MSPSS.

Social support scores at the beginning and end of the study were not significantly different in the control and intervention groups. However, there was a significant difference in the mean score of social support at the end of the study between the intervention and control groups. Besides, the difference in the mean score of social support at the beginning and end of the study was significant in the two groups.

In the present study, frequent telephone conversations (twice a week for four weeks), as well as providing recommendations during phone conversations for improving familial bonds and friendships, could improve subjects' psychological status and perceived social support.

In previous studies, the concept of social support including information and emotional support was applied to study the effect of telephone support on different aspects of health. However, no study has been performed regarding the effect of telephone support on perceived social support in women with gestational nausea and vomiting.

According to the findings, the two groups were similar at the beginning of the study in terms of the mean score of stress (based on VAS). No significant difference was found in the mean scores of stress at the beginning and end of the study in the control group; however, the difference was significant in the intervention group. Also, no significant difference was found in the mean scores of stress at the end of the study between the two groups. Furthermore, the mean difference of stress score at the beginning and end of the study was not significant in the two groups.

The results of studies by Leiu et al. (2013), Wells et al. (1995) (18), and Erikson et al. (2013) (19) were not consistent with the findings of the present study. Leiu et al. aimed to determine the effect of professional support on nausea and vomiting and quality of life in women at the beginning of pregnancy. They concluded that professional support (i.e., holding face-to-face sessions and providing booklets and telephone support) led to decreased distress symptoms in the intervention group.

In the study by Wells and colleagues, the effect of telephone support on psychological advantages was evaluated in pregnant women (in week 34 of pregnancy). It was revealed that telephone support is effective in decreasing perceived stress at the end of pregnancy. Moreover, Erikson et al. (2013) showed that telephone support (discussions about important issues for mothers and forming reliable

relationships), which was performed daily for two weeks for lactating women, could decrease stress in mothers and spouses.

The findings of the present study were in agreement with the study by Thompson et al. (2007), which aimed to compare the effects of behavioral management at home and telephone support for decreasing depression symptoms and perceived stress in Chinese women with dementia. The results showed that six telephone conversations with a two-week interval were not effective for stress management in the intervention group.

In the present study, the mean difference of stress score at the beginning and end of the study was -1.606 ± 1.91 in the intervention group and -0.603 ± 1.99 in the control group ($P=0.052$). It seems that with a larger sample size, this difference will be significant ($P<0.05$). Besides, paired t-test results showed a significant difference in stress scores before (4.410 ± 1.712) and after telephone support (2.626 ± 1.686) in the intervention group.

Based on some conducted studies, stress could be one of the influential factors for nausea and vomiting. In the present study, one part of telephone conversations was allocated to decreasing stress and providing opportunities for mothers to express their anxieties and ask questions; the questions were answered to decrease their stress. These interventions could justify the significant difference in the stress score of the intervention group at the beginning and end of the study.

One's reaction to stress depends on genetics, personality traits, previous experiences, social support, and stress management strategies. Pregnant women may face other stressors such as physical changes, hormonal changes (often accompanied by mood swings), and pregnancy-related anxiety such as fear of neonate's health and labor pain. Thus, considering the effect of multiple factors on stress, telephone support could not lead to significant improvements in stress. However, the effect was nearly significant in terms of the mean difference of stress score at the beginning and end of the study ($P=0.52$).

Limitations of this study included uncontrollable differences in participants' accuracy, intelligence, and patience. The subjects' statements were considered reliable,

which is another limitation of this study. Moreover, undiagnosed physical or mental diseases could have influenced the results of our study.

In order to obtain more accurate results, it is recommended to conduct this study on a larger sample size. Also, perceived stress questionnaire for testing the effect of telephone support on the stress level of women with gestational nausea and vomiting, along with VAS, should be applied in future research. Moreover, the effect of telephone support for women and their spouses on perceived stress of women with gestational nausea and vomiting should be evaluated in future studies.

Conclusion

Telephone support could to some extent affect the stress of women with nausea and vomiting and improve their perceived social support. Therefore, it is recommended to apply telephone support as an effective and accessible method for improving perceived social support and decreasing stress in women with gestational nausea and vomiting.

Acknowledgements

This study was part of a MSc thesis, approved by vice-presidency for research at Mashhad University of Medical Sciences (MUMS) (approval code: 920088, IRCT 2014012316326N1, July 17, 2013). This study was financially supported by MUMS vice-presidency for research and approved by MUMS ethics committee. We would like to express our deepest gratitude to MUMS vice-presidency for research and all participants who helped us conduct this study.

Conflicts of interest

Authors declared no conflicts of interest.

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