



Supportive-Educational Tele-counseling versus Routine Care for Treatment of Constipation and Heartburn

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Abstract

Background: Pregnancy prompts a raft of physiological changes in women, such as constipation and heartburn. The telephone is one of the most accessible means of communication for people. The present study aimed to assess the impact of Tele Supportive-Educational Counseling on treating constipation and heartburn among pregnant women.

Methods: This study is a quasi-experimental study on 110 pregnant women referring to primary care centers in Neyriz and Estahban, Fars, Iran in 2020. The Rome III and GERD (Gastroesophageal Reflux Disease) questionnaires assessed constipation and heartburn in pregnant women, respectively. The two questionnaires were completed before the intervention. Participants scoring over eight were distributed between the intervention and control groups to assess the constipation and heartburn variables. Individuals were randomly assigned to the intervention and control groups. In the intervention groups, the researcher provided telephone educational support counseling via three calls of 10-20 minutes, weekly for three weeks. In the control group, standard care was offered. One week after the intervention, the two questionnaires were completed again. Data were analyzed using SPSS version 25.

Results: In the constipation and heartburn intervention groups, tele-supportive-educational counseling before and after the intervention significantly mitigated constipation and heartburn ($P < 0.0001$).

Conclusion: The results suggested that educational supportive telephone counseling has improved constipation and heartburn in pregnant women. Hence, this method can be recommended to midwifery policymakers as a treatment method for pregnant women in clinical settings.

Keywords: Constipation, Heartburn, Pregnancy, Distance counseling

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Introduction

Pregnancy constitutes a key and impactful period in a woman's lifespan, which is associated with a broad range of physiological changes that increase susceptibility to complications, such as constipation and heartburn (1). There are 210 million cases of pregnancy in the world annually, and this demographic group calls for exceptional health services. The physiological, physical, psychological, and biochemical changes associated with pregnancy affect the entire system of the mother's body (1). The gastrointestinal tract is an organ commonly influenced by these changes. Nausea, vomiting, heartburn, and constipation are prevalent gastrointestinal complaints during pregnancy (1). The rise of these problems affects a pregnant woman's ability to perform daily activities, which ultimately has a bearing on their mental, social, and physical health, in general, on the quality of life at different

stages of pregnancy. (2), 40% of pregnant women suffer from constipation (3). During pregnancy, the frequency of heartburn has been documented as 17-45% (4). Each of these complications can cause problems for the mother or fetus.

Effective education and support during pregnancy can be instrumental in the mitigation of mental disorders, stress, and anxiety, and the improvement of the physical and mental health of mothers (5). In these cases, the ideas provided by the counselors are meant to be supportive (6). Today, telephone medical care is a significant component of care delivery across the United States (7). The flexible nature of remote health facilitates access to pregnancy and childbirth services, which may help reduce the adverse health consequences for pregnant women (8).

Abadian et al found that telephone support alleviates pregnancy nausea and vomiting (9). Abasi et al concluded



that distance education and telecommunications via new communication technologies and face-to-face education can foster adherence to theoretical and practical recommendations related to common pregnancy complaints (2). In a systematic review study, Xie et al reported that telemedicine interventions can effectively lower blood sugar in patients and decrease pregnancy problems (10). Given the paucity of related studies and the lack of appropriate treatments for these problems and their high prevalence in pregnant mothers, the study was undertaken to assess the effect of tele-supportive-educational counseling on constipation and heartburn during pregnancy.

Methods

Study Design

The present study employed a quasi-experimental design including a control group, conducted on 110 pregnant women with constipation (n=50) and heartburn (n=60) referred to health centers in Neyriz and Estahban in 2020-2021 (Fars, Iran). This research selected participants using a simple and accessible random sampling method.

Using an available sampling method, subjects were selected from clinics and family physicians' offices. To do so, researchers referred to 23 family physicians' offices and two clinics in Neyriz city and obtained the registry of expectant mothers from healthcare professionals or the clinics. In Estahban, however, all pregnant women were identified using records from the health network. Due to the small number of centers, the available sampling method was used in this study. As reported by Abedian et al (9) and according to the following formula:

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\beta} \right)^2 (\sigma_1^2 + \sigma_2^2)}{d^2}$$

$$\alpha = 0.05, 1 - \beta = 0.9, \sigma_1 = 1.95, \sigma_2 = 1.94, d = 2, n = 20$$

A sample size of n=20 was estimated for each intervention and control group. A test power of 80% to detect differences in the score of 2 points between the two groups, if any, as well as a significance level of 0.05, was considered. In the end, a sample size of n=80 was calculated, but to be on the safe side, n=110 samples were assigned as follows: The constipation intervention group comprised 29 participants, 21 to the constipation control group, 30 to the heartburn intervention group, and 30 to the heartburn control group.

Inclusion Criteria

Minimum literacy, in the advanced final trimester of pregnancy, willingness to attend research, no history of internal medicine, surgery, or intake of certain

medications, single pregnancy, access to telephone, and no hearing or speech problems (7, 11).

Exclusion Criteria for Both Groups

Preterm delivery, unwillingness to attend the research (12), treatment of these complications in other medical centers, or the employment of other pharmacological and non-pharmacological methods to treat these complications.

Study Questionnaires

In this study, in order to achieve research objectives, three questionnaires, including demographic, constipation, and heartburn questionnaires, were used. The demographic and contextual questionnaires consist of two parts. The initial section gathered demographic data, including age, education, and employment status, and the second part was dedicated to pregnancy information (number of pregnancies and deliveries, gestational age by week, history of abortion, number of children, complications in a previous pregnancy), along with two questionnaires that assessed constipation and heartburn.

The constipation questionnaire was based on the Rome III criteria, adopted in several studies in Iran. It was a standard questionnaire for assessing constipation in pregnancy employed by Mirghofvand et al (13). It comprises eight items. The questionnaire evaluated bowel function and included items on bowel movement frequency, defecation status, straining, sensation of incomplete evacuation, anorectal obstruction, the need for manual assistance, and stool characteristics such as volume and color. The Constipation Scale, a valid scientific tool utilized by McMillan for cancer patients and Williams and Broussard for pregnancy, has been reported to have a reliability of r=92% and r=86%, respectively. Scores on the Rome III questionnaire vary between 0 and 24.

The six-item GERD Heartburn Questionnaire was utilized in the study. The GERD questionnaire evaluates the count of symptomatic days and the utilization of OTC medications in the last week. Symptom frequency is assessed using a four-point Likert scale (0–3) covering four positive GERD indicators (heartburn, regurgitation, sleep disturbance due to reflux, and OTC medication use for reflux) and employing a reverse 3–0 Likert scale for two negative indicators (epigastric pain and nausea). Thus, the total possible GERD score extends from 0 to 18. In addition, sleep disturbance and use of OTC medication are considered to assess disease impact, producing a separate impact score with a possible range of 0 to 6. Gastroesophageal Reflux Disease (GERD), Moradniani et al developed and validated the questionnaire, reporting a sensitivity of 65% and specificity of 71%. A cross-sectional study confirmed the validity and reliability of the Persian version (14). Before the intervention, two groups completed the questionnaires on constipation,

heartburn, and demographic information, and provided their cell phone number and contact information.

Pregnant women scoring >8 on constipation or heartburn questionnaires were included in the study. They received three phone calls immediately after completing the questionnaire, one week, and two weeks later. Lasting about 10-20 minutes, all calls were made by one person (H Sh). All basic requirements for upgrading telephone counseling were satisfied, including active listening and understanding, comprehensive and active recognition of the problem, evaluation of the need for information and guidance, and presentation of relevant recommendations (15).

It is worth noting that counseling details, including the telephone-based educational support package related to pregnant women with constipation and heartburn, were based on scientific principles of nutrition, midwifery, gynecology, internal medicine, orthopedics, physiotherapy, and rehabilitation; several exercises related to rehabilitation and orthopedics can help reduce heartburn and constipation problems. The two control groups received routine prenatal care, and one week after the intervention, questionnaires were distributed among the four groups. Then, data were collected and analyzed using descriptive and inferential statistical methods by IBM SPSS 25 software. Chi-square, Fisher, Wilcoxon, Mann-Whitney, and ANCOVA tests were conducted. The data distribution before the intervention was not normal in both groups, while the data distribution after the intervention was normal, which is why the Analysis of Covariance test was used.

Results

In both groups for the constipation variable, most participants were under 30 years of age, with no significant

age difference observed between the groups. Additionally, no notable changes were found in comparing the groups regarding other demographic information presented in Table 1.

In the intervention group for the heartburn variable, 15 people were below 30 years of age, and 15 were over 30 years of age. In the control group, 17 people were under 30 years old, and 13 were over 30 years of age. The groups were comparable in age distribution, with no significant differences ($P=0.605$). Table 2 shows other demographic variables in the two groups.

As shown in Table 3, the mean heartburn score did not differ significantly across the two groups before the intervention ($P=0.95$), but a significant difference emerged after the intervention ($P<0.0001$). In participants receiving the intervention, the mean score of heartburn dropped significantly ($P<0.0001$), and among participants in the control group, the mean score of heartburn soared significantly before the intervention ($P=0.035$).

Table 4 shows that before the intervention, the intervention group had a higher mean constipation score than the control group ($P=0.037$). After the intervention, the score decreased significantly in the intervention group ($P<0.0001$) but increased in the control group ($P=0.0006$).

Discussion

The present research evaluated the effect of supportive-educational tele-counseling on treating constipation and heartburn among pregnant women. In the present study, the rate of constipation and heartburn fell significantly in the intervention groups of supportive-educational tele-counseling one week after the intervention. In our study,

Table 1. Distribution of demographic variables for constipation in the intervention groups

Variable		Group		Test statistics	P-value
		Control Number (percent)	Intervention Number (percent)		
Age	30 $\geq$	12 (57.1)	8 (62.1)	*0.123	0.726
	> 30	9 (42.9)	11 (37.9)		
Education	Master's degree and lower	12 (57.1)	23 (79.3)	*2.850	0.091
	Bachelor's degree and higher	9 (42.9)	6 (20.7)		
Employment	No	18 (85.7)	26 (89.7)	**1.179	0.686
	Yes	3 (14.3)	3 (10.3)		
Number of deliveries	0	8 (38.1)	13 (44.8)	**3.211	0.351
	1	8 (38.1)	9 (31.0)		
	2	4 (19.0)	2 (6.9)		
	3 $\leq$	1 (4.8)	5 (17.2)		
Number of children	0	9 (42.9)	14 (48.3)	*0.144	0.931
	1	8 (38.1)	10 (34.5)		
	2 $\leq$	4 (19.0)	5 (17.2)		

*Chi-square; ** Fisher; Significant at $P<0.05$.

Table 2. Distribution of demographic variables for heartburn in groups

Variable		Group		Test statistics	P-value
		Control Number (percent)	Intervention Number (percent)		
Age	30≥	17 (56.7)	15 (50)	*0.268	0.605
	> 30	13 (43.3)	15 (50)		
Education	Master's degree and lower	16 (53.3)	20 (66.7)	*1.111	0.292
	Bachelor's degree and higher	14 (46.70)	10 (33.3)		
Employment	No	27 (90.0)	24 (80.0)	**1.176	0.472
	Yes	3 (10.0)	6 (20.0)		
Number of deliveries	0	8 (38.1)	13 (44.8)	**3.340	0.374
	1	8 (38.1)	9 (31.0)		
	2	4 (19.0)	2 (6.9)		
	3 ≤	1 (4.8)	5 (17.2)		
Number of children	0	14 (46.7)	7 (23.3)	**8.592	0.014
	1	9 (30.0)	19 (63.30)		
	2 ≤	7 (23.3)	1 (3.3)		

*Chi-square; ** Fisher; Significant at $P<0.05$.

Table 3. Comparison of heartburn in the two groups before and after intervention

Group	Heartburn mean ± standard deviation		P-value
	Pre-intervention	Post-intervention	
Intervention	17.86 ± 1.73	12.20 ± 0.886	<0.0001*
control	17.73 ± 1.74	17.96 ± 1.84	0.035*
P-value	0.95**	<0.0001***	-

*Wilcoxon; ** Mann-Whitney; *** Analysis of covariance; Significant at $P<0.05$.

this improvement in heartburn was related to reduced heartburn and reduced reflux of stomach contents into the throat or mouth. It reduced nighttime sleep disturbance due to reflux or heartburn related to questions 1 to 3.

Healthcare providers may be unable to provide appropriate counseling due to their busy schedule, lack of time, or sometimes insufficient information, which can lead to persistent problems in pregnant women.

Telemedicine describes outpatient health care services utilizing information and communication technology (ICT) for patient treatment (16).

Both the American College of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine advocate for telecommunication facilities to improve accessibility to women's healthcare services (17).

In a randomized clinical trial study, Pedram Razi et al concluded that telephone counseling and training can improve self-efficacy among women with breast cancer. Raised awareness had modified the attitude of these people. The findings of this study are consistent with the results found in the present study (18).

Abedian et al in their clinical trial reported that telephone support mitigates pregnancy nausea and vomiting. Thus, it is recommended as a practical and accessible approach. In line with the present study, increased awareness was

Table 4. Comparison of constipation in the two groups before and after intervention

Group	Constipation mean ± standard deviation		P-value
	Pre-intervention	Post-intervention	
Intervention	20.62 ± 1.84	9.55 ± 1.72	<0.0001*
control	19.42 ± 1.91	20.04 ± 2.03	0.0006*
P-value	0.73**	<0.0001***	-

*Wilcoxon; ** Mann-Whitney; *** Analysis of covariance; Significant at $P<0.05$.

associated with behavioral changes (9).

Lee et al stated that telephone counseling, as an easy and cheap support program, can effectively improve the quality of life in postpartum women by raising maternal awareness and responding to their needs, which corresponds to the findings reported in the present study (7).

In a randomized controlled trial, Cetin et al reported that implementing the Tele TRIAGE protocol for patients receiving systemic chemotherapy improved symptom control, quality of life, and self-management (19).

Høyer et al reported that telephone support did not improve the well-being of individuals diagnosed with breast cancer, which is at odds with this study (20). This inconsistency can be attributed to the short follow-up time (2 weeks) and the small number of telephone calls (one call).

In a review study, Snoswell et al reported the clinical effectiveness of remote health "in clinical services, including stroke management, blood pressure regulation, mental health support, pain control, hypoglycemia management, and diagnostic services. It is particularly evident in skin diseases (skin cancer) and ophthalmology (glaucoma) (21).

Hongyu et al in a study found that biofeedback combined with psychotherapy may help alleviate clinical symptoms

in patients with constipation, as well as improve anxiety, depression, and sleep quality (22). This study is consistent with the present study.

According to the study by Ozturk et al educational interventions for patients with constipation reduced symptoms and enhanced well-being (23).

Casale M et al found that inspiratory muscle training could be helpful in GERD cases and for mild forms associated with diet (24). This observation corresponds with the findings of this study. In our study, this improvement occurred in all eight constipation-related items.

In general, the results of this study indicate that the adoption of educational supporting tele-counseling has a positive effect on constipation and heartburn in pregnant women. Given that this method has no side effects, it can be proposed as a non-invasive method.

A notable limitation of this study is the variability between individuals (accuracy, learning rate, intelligence, and personal patience) in pregnant women enrolled in the study and their impact on how research questions were answered, which is beyond the researcher's control. Moreover, eliminating these complications compromises the internal validity of the research over time. Hence, attempts were made to control these limitations by defining a control group.

Conclusion

This study demonstrated that Supportive-Educational tele-counseling positively affects the treatment of constipation and heartburn in pregnant women; therefore, this method can be suggested as a treatment method without any complications or abnormal changes for pregnant women.

Acknowledgments

This research project was approved by the Ethics Committee of Kerman University of Medical Sciences (Ethical code: IR.KMU.REC.1398.204) and conducted in collaboration with the Research Center. We would like to acknowledge those who helped us throughout this project.

Authors' Contribution

Conceptualization: Hadiseh Shamsi, Firoozeh Mirzaee.

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Methodology: Atefeh Ahmadi.

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Competing Interests

The authors report that they have no conflict of interest.

Ethical Approval

This study was approved by the Ethics Committee of Kerman University of Medical Sciences (Ethical code: IR.KMU.REC.1398.204). For sampling, the study objectives were explained to pregnant women who met the inclusion criteria. Written consent was obtained before the intervention, and individuals could leave the study without restrictions.

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