Original Article

Effect of Hyperemesis Gravidarum on Pregnancy Adaptation: A Case-Control Study

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Abstract

Objectives: To examine the effect of hyperemesis gravidarum (HG) on pregnancy adaptation.
Methodology: This research was performed as a case-control study at a maternity hospital between April and August 2016. The research included 148 pregnant women. Hyperemesis Gravidarum was diagnosed in 42 cases (106 in the control group). An introductory form and a Prenatal Self-Evaluation Questionnaire (PSEQ) were used as data collection tools.
Results: The pregnant women from the case and control group had similar socio-demographic and obstetric characteristics. When median scores from the pregnant women in the case and control groups on the PSEQ and sub-questionnaires were compared, there was a significant decrease in a pregnant woman's concern for well-being of self and baby (p=0.000), acceptance of pregnancy (p=0.000), identification with motherhood role (p=0.001), preparation for labor (p=0.001), fear of helplessness and loss of control in labor (p=0.008), relationship with mother (p=0.001), relationship with husband/partner (p=0.012) and PSEQ total points (p=0.000).
Conclusions: Hiperemezis Gravidarum adversely affects a pregnant woman's well-being of self and baby, acceptance of pregnancy, identification with motherhood role, preparation for labor, fear of helplessness and loss of control in labor, relationship with her mother relationship with husband or partner and pregnancy adaptation.

Keywords: Hyperemesis gravidarum, adaptation, pregnancy, midwifery, care.

Introduction

Hyperemesis gravidarum (HG) is nausea and vomiting, which causes critical dehydration, electrolyte imbalance, 5% weigh loss during pregnancy and ketonuria. It can be so severe that it requires inpatient therapy. The symptoms typically start 5-6 weeks after the last menstrual period, peak at 8-12 weeks and then gradually lose their intensity. In about 9% of pregnant women, the symptoms continue until the 20th gestational week. Although nausea and vomiting are observed in more than 80% of pregnant women, HG is observed in 0.3-2% (Cashion, 2013; Gilbert, 2013; Wong et al., 2013).While the gestational period is perceived by some women as a process to learn maternal behaviors, others perceive it as a crisis period requiring adaptation to new roles. This crisis period may become a problem to create an adaptation challenge as it may enable the growth (Taskin, 2018; Yilmaz & Beji, 2010). Some of the influencing the adaptation to pregnancy process include the roles that the pregnant woman already plays preparing for motherhood, positive and negative role models around her, planned pregnancy, having a sufficient and correct knowledge of pregnancy and childbirth, her health, education, sociocultural and financial situation, support of her husband and people around her, and self-perception (Koyun & Demir, 2013; Mutlugunes & Mete, 2013; Mete, 2008; Kuo et al., 2007; Swallow et al., 2004). Hiperemezis Gravidarum adversely affects physical activities, work performance, family and social relationship, nutrition and health of the pregnant woman, and makes her pregnancy

adaptation process much more difficult (Mutlugunes & Mete, 2013; Gungor & Beji, 2007).

During the gestation period, each member of the health team has important tasks for reducing pregnancy problems that adversely affect pregnancy adaptation, especially midwives. In this regard, it is important for midwifery approach to determine the correlation of pregnancy adaptation in pregnant women with HG. While the midwives especially endeavor to reduce the symptoms seen in the pregnant women with HG, they should also plan interventions to increase pregnancy adaptation (Kuo et al., 2007; Khadijah & Louise, 2007). Furthermore, they can activate the social support systems of the individual and ensure that adaptation of the woman increases (İsbir & Mete, 2013; Ozdemir et al., 2010; Chou et al., 2008). Therefore, this research examined the effects of HG on pregnancy adaptation.

Method

Study design and participants: The research was carried out as a case-control between April and August 2016 at the Maternity Polyclinics and Gynecology Service of the Aydin Maternity and Children Hospital. The research population consisted of the pregnant women who visited the Aydin Maternity and Children Hospital located in Aydin city for care and therapy, were in the 6th to 20th gestational week, were between the ages of 20-35 and agreed to participate in the research. The minimum number of subjects needed in the study was based on G*POWER version 3.1.9.2 (http:// www.download82.com/download/windows/g-power/). Because the data was analyzed using the t-test with an effect size of 0.50 at a power of 0.80 and α=0.05, the sample size was 144. The case group contained 48 subjects and the control group contained 96 for the t-test. It is accepted that in case-control studies the number of samples in control group could be equal or more than case group (Aksakoglu, 2013). Therefore, in this study the number of samples in the control group was twice that in the case group. Based on a consideration of possible losses, 210 pregnant women (59 for the case group and 151 for the control group). Because 45 women in control group and 17 women in case group were excluded for reasons, this study was ultimately completed with 148 pregnant women 42 in the case group and 106 in the control group (Figure 1). The pregnant women from the case and control groups were selected using the convenience sampling method and matched statistically in terms of gestational week and age group.

The inclusion criteria were speaking and understanding Turkish and being at least a primary school graduate. The pregnant women hospitalized after an HG diagnosis were included in the case group. The pregnant women who visited the maternity polyclinic for care and therapy were included in the control group. The pregnant women with diagnosed mental health problems were not included in the study. The pregnant women who were not primary school graduates were not included in the study because they would have been unable to fill out the self-reported PSEQ scale.

The study was approved by Adnan Menderes University Faculty of Medicine Ethical Committee for Noninvasive Clinical Investigations (Approval Number: 2016/848) and also permission of hospital management were obtained to conduct the study. Written informed consent was obtained from pregnants who participated in this study, and they were ensured to participate in the study voluntarily.

Measures:

The data were collected using the “Introductory Form (IF)” and “Prenatal Self-Evaluation Questionnaire (PSEQ)”. The IF, developed in light of relevant literature, contained 27 questions regarding sociodemographic characteristics, obstetric characteristics, and HG symptoms. Expert opinions were obtained from six faculty members to ensure the content validity of the questionnaire. This was followed by a pilot study with 10 pregnant women hospitalized after HG diagnosis to improve the understandability and usability of the questionnaire. Some questions were rewritten according to the results of the pilot study, and the pregnant women participating in the pilot study were not included in the survey sample. The IF was completed using the researcher by the face-to-face conversation technique, and because the PSEQ was to be completed using the self-rating method, the participants were asked to complete it by themselves.Lederman developed the PSEQ in 1979 to evaluate the pregnancy and maternity adaptation of women during the prenatal period (Lederman & Lederman, 1979). Beydag and Mete performed the validity and reliability study for the Turkish version of the questionnaire (Beydag & Mete, 2008). The questionnaire

consists of 7 sub-questionnaires and 79 questions evaluate the pregnancy adaptation of the mothers. The sub-questionnaires were grouped as the pregnant woman's well-being of self and baby, acceptance of pregnancy, identification with motherhood role, preparation for labor, fear of helplessness and loss of control in labor, relationship with her mother, and relationship with husband or partner (Beydag & Mete, 2008; Stark, 2001). In Beydag and Mete's study, the coefficient of the questionnaire's internal consistency was 0.81, and the coefficient of internal consistency of the subgroups was between 0.72 and 0.85. In this study, the coefficient of the questionnaire's internal consistency was 0.90, and the coefficient of internal consistency of the subgroups was between 0.33 and 0.88. Amongst the articles of the PSEQ, 47 of them are reverse articles. On the PSEQ, 47 are reverse articles where scoring is conducted in the reverse order. The minimum score for a complete questionnaire is 79 and the maximum score is 316. Low scores show that the pregnancy adaptation ratio is higher.

Data analysis: Statistical Package for Social Sciences SPSS V.18 software was used for the analysis of data. The research data were analyzed by the descriptive statistics (as mean ± standard deviation (SD) or median with interquartile range (IQR) for quantitative variables and number and percentage), chi-square (X^2), significance test of the difference between two mean values (t-test) and Mann Whitney U test. P values of less than 0.05 were considered significant.

Results

The research sample included 148 pregnant women. The median age of the pregnant women from the case group was 27.5 years (24-31 years), and the median age of the pregnant women from the control group was 25 years (22-29 years). The socio-demographic characteristics of the study are shown in Table 1. When the data regarding the obstetric characteristics of the pregnant women was reviewed, the differences between groups were not significant ($p>0.05$).

The incidence of HG symptoms for the pregnant women from the case group It was determined that were as follows: 97.6% (n: 41) of the pregnant women (n:41) from the case group included in the research had a nausea complaint; 95.2% of them (n: 40) had a vomiting complaint; 19.0% of them (n: 8) did not have oral nutrition; all of them (100.00%, (n: 42) had a nutrition IV; 50.0% of them (n: 21) had ketonuria; 95.2% of them (n: 40) had dehydration symptoms findings (dryness of mouth and skin, dizziness, headache, etc.); and 52.5% of them (n: 23) lost 5% of their pre-pregnancy weight with 5% depending on the incidence of the HG symptoms.

In Table 2, the median scores of the pregnant women on the PSEQ and sub-questionnaires are presented. As a result of the statistical analysis, the opinions of the pregnant women from the case group were more negative than from the control group when the sub-questionnaire scores on "concern for the well-being of self and baby" were compared ($p<0.001$).

The acceptance of pregnancy in the case group was less than in the control group ($p<0.001$). The identification with the motherhood role of the pregnant women from the case group was less than from the control group ($p<0.05$). The pregnant women from the case group were not as ready for birth as the control group ($p<0.05$). The fear of helplessness and loss of control in labor of the pregnant women from the case group was higher than from the control group ($p<0.05$).

Relations of the pregnant women from the case group with their mother ($p<0.05$) and husband/partner ($p<0.05$) were more negative than from the control group.The pregnant women from the control group scored a median total points of 127 (min-max: 91-220) on the PSEQ, whereas the case group scored 157 (min-max: 111-226). Thus, the adaptation to pregnancy of the pregnant women from the case group was lower than from the control group ($p<0.001$).

Table 1. Socio-demographic characteristics

Characteristics	Case (*n*=42)	Control (*n*=106)	Z/X^2	*p*
Age				
Median (IQR)	27.5 (24-31)	25 (22-29)	-1.636	0.102*
Min-max	(20-35)	(20-35)		
	***n* (%)**	***n* (%)**		
Education				
Primary school	17 (40.5)	36 (34.0)		
Secondary school	16 (38.1)	41 (38.7)	1.574	0.665
High school	5 (11.9)	21 (19.8)		
University education and higher	4 (9.5)	8 (7.5)		
Occupation				
Housewife	35 (83.3)	93 (87.7)		
Officer	2 (4.8)	3 (2.8)	2.924	0.486
Worker	4 (9.5)	10 (9.5)		
Other	1 (2.4)	-		
Health insurance				
Yes	32 (76.2)	94 (88.7)	2.786	0.095
No	10 (23.8)	12 (11.3)		
Socioeconomic status				
Low	7 (16.7)	7 (6.6)	5.530	0.070
Medium	33 (78.5)	84 (79.2)		
High	2 (4.8)	15 (14.2)		
Type of family				
Extended family	13 (31.0)	31 (29.2)	0.042	0.996
Immediate family	29 (69.0)	75 (70.8)		

IQR: Inter-quartile range * Mann Whitney U

Table 2.Comparison of median scores of pregnant women on the Prenatal Self-Evaluation Questionnaire (PSEQ) and sub-questionnaires

PSEQ and sub-questionnaires measure	Case (*n*=42)				Control (*n*=106)				*Z/t*	*p*
	Min max	Median (IQR)	SO	ST	Min max	Median (IQR)	SO	ST		
Well-being for self and baby	10-39	27 (23-31)	96.62	4058.00	10-35	19 (13-25.5)	65.74	6968.00	-3.956	0.000
Acceptance of pregnancy	17-55	31 (24-37)	110.07	4623.00	14-54	20 (18-23.25)	60.41	6403.00	-6.367	0.000

Identification with motherhood role	17-41	26 (21-30)	93.68	3934.50	15-42	21 (18-26)	66.90	7091.50	-3.433	0.001
Preparation for labor	14-29	22 (18-24)	92.35	3878.50	10-27	19 (16-22)	67.43	7147.50	-3.200	0.001
Fear of helplessness and loss of control	13-31	22.71±4.92 †	-	-	10-33	20.13±5.40 †	-	-	-2.685	0.008 *
Relationship with mother	10-40	13.5 (11.75-17.25)	92.26	3875.00	10-34	11 (10-14.25)	67.46	7151.00	-3.240	0.001
Relationship with husband/partner	10-32	15.5 (12.75-17.25)	88.42	3713.50	10-31	13 (10-18)	68.99	7312.50	-2.511	0.012
Total questionnaire point	111-226	157 (147.5-171.5)	106.24	4462.00	91-220	127 (110-148)	61.92	6564.00	-5.670	0.000

* t-test of two independent groups (independent samples), †Mean ± Standard Deviation SO: Mean Rank

ST: Sum of Rank

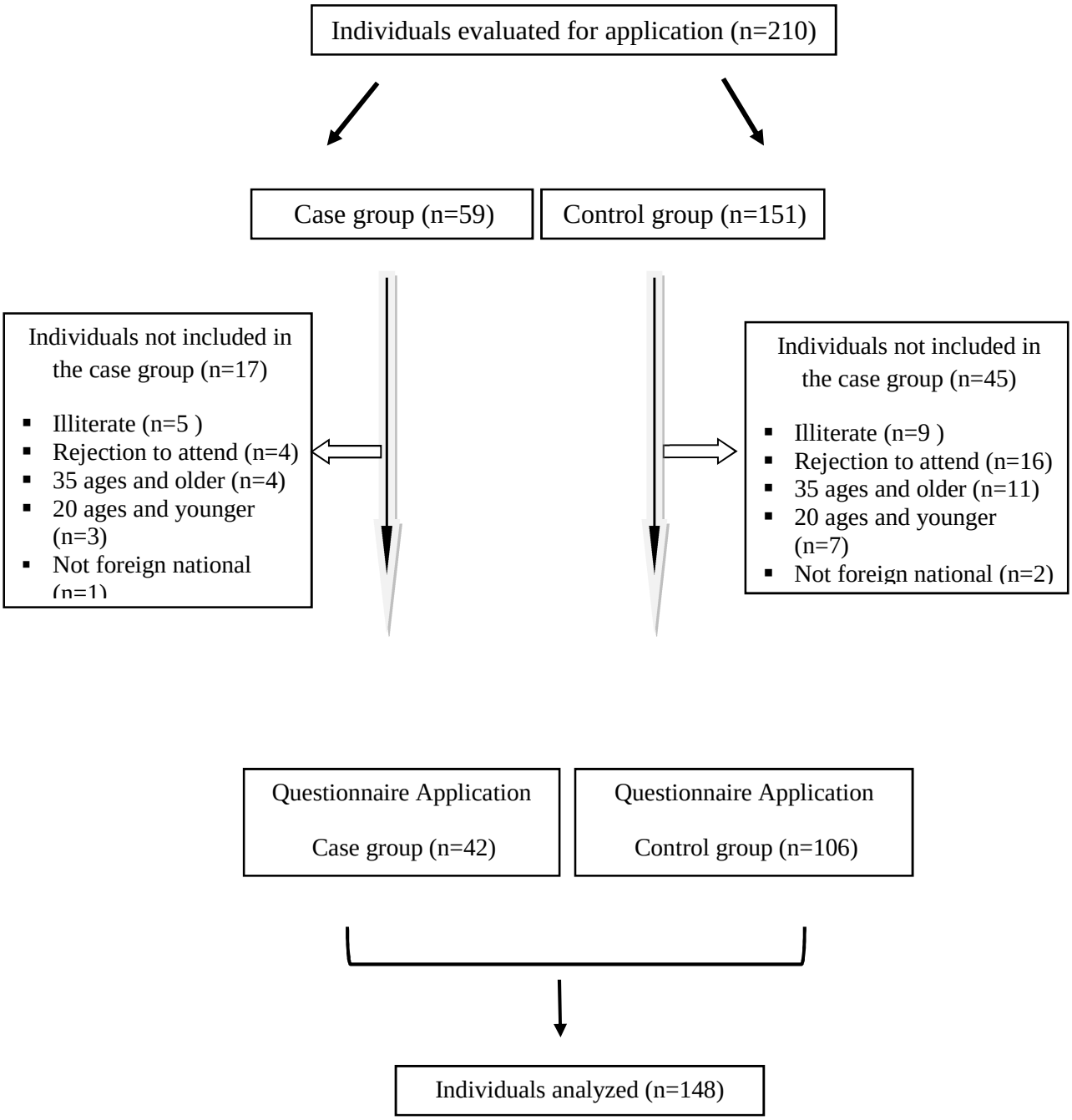

Figure 1. Flow chart of the individuals received for research.

Discussion

In this study, the pregnant women from the case and control groups had similar socio-demographic and obstetric characteristics. This similarity allows comparisons to be made between the groups.

Hiperemezis Gravidarum is a pathological situation characterized severe vomiting and nausea in pregnancy, 5% pre-pregnancy weight loss and ketonuria. It may cause electrolyte imbalance and dehydration resulting in renal dysfunction and damage the central nerve system (Gilbert, 2013; Cecelia, 2013). All pregnant women with HG symptoms from the case group were fed intravenously, and almost all had nausea, vomiting, and dehydration (dryness of mouth and skin, dizziness, headache, etc.). Furthermore, ketonuria and 5% pre-pregnancy weight loss were observed in half of the women. In our study, the pregnant women with HG were inpatients in the clinic.

The pregnancy adaptation of the women from the case and control groups is evaluated using the PSEQ and sub-questionnaires. Lower scores show that pregnancy adaptation is higher (Beydag, 2007). The opinions of the pregnant women from the case group were more negative than the control group on "concern for well-being of self and baby." The physical and emotional health of the pregnant women from the case group might have been affected by their severe nausea and vomiting, and they may have experienced fear and anxiety because they were on bed rest in the hospital. However, any positive opinions regarding a baby enable a pregnant woman to take better care of herself and to better adapt to pregnancy (Tortumluoglu, Okanli & Erci, 2003)

Acceptance of pregnancy in the case group was less than in the control group. In the study of Mutlugunes, the acceptance of pregnancy decreased as nausea and vomiting increased (Mutlugunes & Mete, 2013). Kuo reported women who experienced severe nausea and vomiting accepted pregnancy less than those who experienced mid or low vomiting , which is similar to our study (Kuo et al., 2007).

The identification with the motherhood role of the pregnant women from the case group (median 26 women) was more than from the control group (median 21 women). Mutlugunes found the mean scores of identification with the motherhood role were 21.6 and the motherhood role was not affected as nausea and vomiting increased (Mutlugunes & Mete, 2013). These findings conflict with our study's findings. This difference may arise from the severity of the symptoms experienced by pregnant women with HG. The women in our study were hospitalized at the time of the study and thus experiencing severe symptoms.

In our study, the pregnant women from the case group were less prepared for labor than the control group. The fear of helplessness and loss of control in labor for the pregnant women from the case group was higher than the control group. The findings of the control group are similar to the finding Stark and Chou et al. conducted on pregnant women with an at-risk-pregnancy (Chou et al., 2005; Stark, 1997). This may arise from anxiety of the pregnant women about themselves and the baby.

Pregnant women from the case group had a worse relationship with their mother than the control group. This may arise because the pregnant women with HG have higher expectations from their mothers.

Pregnant women from the case group had worse relationships with their husband or partner than the control group. Yekenkunrul found an inverse correlation such that if the relationship of the pregnant women with their husband was positive, nausea and vomiting decreased. These findings are similar to our study (Yekenkunrul & Mete, 2012).

In our study, the median score of the pregnant women from the control group on the PSEQ was 127 (min-max: 91-220), whereas the median score from the case group was 157 (min-max: 111-226). In studies that examine pregnancy adaptation using the PSEQ, the mean questionnaire score stated by Chou et al. (2005, 2008), Sercekus and Mete , and Demirtas and Kadioglu (144.0, 147.8, 132.1, and 149.7 respectively) are similar to the findings from the case group of our study (Demirtas & Kadioglu, 2014; Serçekus & Mete, 2010; Chou, Kuo & Wang, 2008; Chou et al., 2005). The differences in pregnancy adaptation between the groups may arise because the studies were conducted in different communities.

Other study findings on healthy pregnancies are similar to the results from the control group in this study (Demirtas & Kadioglu, 2014; Serçekus

& Mete, 2010; Chou et al., 2008; Beydag & Mete, 2008; Chou et al., 2005; Stark, 1997). Kamalak stated that high-risk pregnant women experienced antepartum symptoms similar to other pregnant women and a high-risk pregnancy did not affected pregnancy adaptation. Thus, the high-risk pregnancy group experienced similar symptoms as the control group, whereas the pregnant women in our case group were included because they experienced the intense symptoms associated with HG (Kamalak & Coban, 2017).

Conclusion

Hiperemezis Gravidarum adversely affects a pregnant woman's concern for well-being of self and baby, acceptance of pregnancy, identification with the motherhood role, preparation for labor, fear of helplessness and loss of control in labor, relationship with her mother, relationship with her husband or partner, and pregnancy adaptation. Based on the data obtained, we suggest that health professionals should consider the adverse effects of HG on pregnancy during prenatal evaluations and should focus on increasing pregnancy adaptation. Furthermore, we suggest performing additional observational and qualitative studies to investigate the effects caused by the severity of HG symptoms on pregnancy adaptation using larger numbers of pregnant women diagnosed with HG.

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