

Factors Affecting Depression During Pregnancy and the Correlation Between Social Support and Pregnancy Depression

Songul Aktas^{1,*}; Kiymet Yesilcicek Calik¹

¹Obstetrics and Gynecology Nursing Department, Faculty of Health Science, Karadeniz Technical University, Trabzon, Turkey

*Corresponding Author: Songul Aktas, Obstetrics and Gynaecology Nursing Department, Faculty of Health Science, Karadeniz Technical University, Trabzon, Turkey. Tel: +90-4622300476, Fax: +90-4622300475, E-mail: songulbora@mynet.com

Received: December 11, 2013; Revised: November 25, 2014; Accepted: January 28, 2015

Background: Women are seriously subjected to psychiatric diseases during pregnancy and depression is the most prevailing one among these diseases. There is a relation between the social support and depression in pregnancy whose predisposing factors are genetic, psychological, biological, environmental, and hormonal.

Objectives: This study aimed to determine the frequency of depression symptoms, and its risk factors. Also it studied the correlation between social support and pregnancy depression.

Patients and Methods: This research is a descriptive cross-sectional study. It was conducted on 266 pregnant women selected by simple random method from all pregnant women admitted at the Maternity Hospital of Trabzon, Turkey from May 21 to June 13, 2008. The data were collected with a questionnaire form, the Beck depression inventory (BDI), and the multidimensional scale of perceived social support (MSPSS).

Results: The mean BDI score of the pregnant women was 11.12 ± 6.65 . According to the BDI, 46.2% of the pregnant women had no depression symptoms, 34.59% of them had mild, 13.91% had moderate, and 4.89% had severe level of depression symptoms. It was found that such factors as the educational level of the pregnant women and their husbands, having an undesired pregnancy, suffering from a chronic disease before pregnancy, presence of pregnancy-related problems, having a child with disability or having relatives whose children had disability, and smoking during pregnancy were the risk factors affecting the severity of the depression symptoms and these results were statistically significant ($P < 0.05$). On the other hand, the mean MSPSS score was 67.89 ± 14.26 and it was found that the pregnant women got the highest social support from their husbands. It was found that there was a significant correlation between BDI and MSPSS total score and its subscale scores ($P < 0.05$).

Conclusions: According to this study, one-fifth of pregnant women were found to experience depressive symptoms, which require treatment during pregnancy, and the factors such as having no support from relatives was found to be associated with the severity of depressive symptoms during pregnancy.

Keywords: Pregnancy; Depression; Risk Factors; Social Support; Turkey

1. Background

Depression, a commonly seen psychological health problem across the world, prevents the functionality, creativity, happiness, and satisfaction of individuals, reduces their quality of life, and leads to losses in the work force (1). Pregnancy, one of the important processes in women, is a natural event as well as a period during which many biological and psychosocial changes are experienced. The risk of the many factors that may cause depression is high because of its stress and anxiety (1-3). Besides, the neuroendocrinological and psychosocial changes that pregnancy causes are too many compared to other periods of life (4, 5). High levels of norepinephrine and cortisol decrease blood flow into the uterus and thus cause severe obstetric and neonatal problems for both the pregnant woman and the fetus (6-8). These problems may be listed as follows: spontaneous abortion, antenatal bleeding, increased uterine artery resistance, preeclampsia,

eclampsia, fetal death, low Apgar score, newborns with low birth weight and high levels of cortisol, neonatal growth retardation, and babies that require neonatal intensive care (6, 9, 10).

International studies emphasize that many cases of depression are among women aged 18-44 years and that depression comprises fecundity periods such as pregnancy, birth, and puerperality (1, 8). The incidence of depression and its symptoms ranges between 8% and 38% (7, 11-14) in the world. This incidence varies between 12% and 36% in Turkey (1, 2, 15).

Among the factors that increase depression risk during pregnancy are history of depression, younger ages of mothers, low socioeconomic status, being exposed to violence before and during pregnancy, disharmony between couples, living alone, having experienced a miscarriage in the past, undesired pregnancy or ambivalent thoughts

about pregnancy, having many children, and a lack or absence of social support (1, 2, 14).

Social support is described as financial, emotional, and mental support given to somebody by others (3, 16). Social support positively and directly affects one's health whether there is stress or not and protects psychological well-being by decreasing or balancing the damages brought about by the stressors caused by life events (3, 17). The conducted studies indicate a close correlation between increased depression levels and insufficient levels of social support during pregnancy (10, 18, 19). Insufficient social support during pregnancy deteriorates the psychological health of the pregnant woman and affects negatively her quality of life, has a poor effect on eating habits, and leads to an increase in the use of alcohol, smoking, and substance use (3, 10).

Depression, one of the health problems frequently happens among pregnant women, is a crucial problem, which should be carefully dealt with, diagnosed early and treated soon because it has an adverse effect on the wellness of the pregnant women, paves the way for postpartum depression, may become chronic, and increases the risk of attempted suicide (1, 2, 20). Depression can be prevented and treated if health care professionals can detect the factors that increase the risk of depression during pregnancy at an early period (1, 21). The aim of the current study was to determine depressive symptom levels of the pregnant women and the sociodemographic and obstetric risk factors that might lead to depression, as well as exploring the correlation between social support and pregnancy depression.

2. Objectives

This study aimed to determine the frequency of depression symptoms, and its risk factors. It also investigated the correlation between social support and pregnancy depression.

3. Patients and Methods

The population of this study consisted of the pregnant women who presented at the Maternity Hospital of Trabzon from May 21 to June 13, 2008. The study was conducted in a large hospital in northeastern Turkey and almost all pregnant women in this region, particularly those living in the vicinity of Trabzon Province, received antenatal care in that hospital. Trabzon Maternity Hospital is a public hospital with approximately 6188 deliveries (3170 vaginal delivery and 3018 cesarean) per year. It was chosen for this study as it is the largest obstetrics hospital in the area with a 300 beds.

3.1. Sample

The present study design was cross-sectional based on time and descriptive according to the purpose of the study (22, 23). The sample of this study was calculated ac-

ording to the formula in which the number of individuals in the population is unknown (Equation 1).

$$(1) \quad n = k^2 \times p \times \frac{q}{d^2}$$

Where, P = 0.22 (according to research conducted earlier, the incidence of depression in pregnancy in Turkey is 22%), q = 1-0.22 = 0.78, d² = 0.052 = 0.025, and n = 3.84 × (0.78 × 0.22) / 0.025 = 263 (22, 23).

According to the results of the above formula, the research sample would be 263 pregnant women. In this study, 3 more women were added to the sample in case of probable data loss and as a result, a total 266 pregnant women comprised the research sample. In the literature, it is stated that a maximum of 10% data more than the determined sample size can be enrolled (22, 23). Pregnant women who accepted to participate in the study were selected by simple random method.

The inclusion criteria besides being pregnant were as follows:

1. Their labor had not started and without any pregnancy complications (placenta previa, preeclampsia, fetal distress, etc.)
2. Without any known psychiatric or neurological disorders that would interfere with the completion of the measurements.
3. Ability to communicate.
4. Not taking any psychiatric drugs during pregnancy.
5. Consent to participate in the research.

We aimed to recruit all pregnant women who met the inclusion criteria, but those who used psychiatric drugs during pregnancy (3 women), those whose labor had started (28 women) and those who did not accept participating in the study for any reason (10 women) were excluded from the study. The study was conducted until it reached the specified number of the sample.

3.2. Procedure and Data Collection

The data were collected with a designed questionnaire with multiple choice questions. The questionnaire form included a descriptive information form that included sociodemographic information, the Beck Depression Inventory (BDI), and the multidimensional scale of perceived social support (MSPSS). It included questions related to the sociodemographic characteristics of the study participants and their medical and obstetric history. After reviewing the relevant literature (1, 2, 6, 11, 15, 24-26), this form was developed by the researcher to study the background and sociodemographic characteristics of the pregnant women.

3.3. Questionnaire Form

After the reviewing the literature, the researchers designed a three-part questionnaire form. The first part was composed of a descriptive information form, which ad-

dressed sociodemographic, obstetric characteristics, and some special situations of pregnancy. The second part was BDI to determine pregnancy depression risks and the third part comprised the MSPSS.

The BDI was developed by Beck et al. (1961) (27) and includes 21 self-evaluation statements about the symptoms of depression and each item scores from 0 to 3. The aim of the inventory is not to diagnose depression but to measure the severity of the depression symptoms objectively. A score between 0 and 9 indicates no depression; a score between 10 and 16 indicates a mild level of depression; a score between 17 and 24 indicates a moderate level of depression; and a score of 25 or higher indicates a severe level of depression (major). The highest score to be obtained from the inventory is 63. The Turkish adaptation, reliability, and validity tests of the inventory were performed by Hisli and the cut-off point in the study was accepted as 17. A score of ≥ 17 detects depressive symptoms that require medical treatment with an exactness of 90% (28). The BDI cut-off point was therefore accepted as 17 in our study.

The MSPSS was developed by Zimet et al. and includes 12 statements. It is rated based on a 7-point Likert scale with responses ranging from "Absolutely no" to "Absolutely yes" (1-7 points). There are 3 subscales of MSPSS (family support, friend support, and significant other support) and each subscale is composed of four statements. The lowest score to be obtained from each subscale is 4 whereas the highest score is 28. The lowest score to be obtained from the scale is 12 whereas the highest score is 84. A higher score indicates a higher level of perceived social support while a lower score indicates no perceived social support or a lack of perceived social support (29). The Turkish adaptation, reliability, and validity tests of the scale were confirmed by Eker et al. (30).

3.4. Procedure

There is one observer in this study. Each pregnant woman was contacted by that observer and provided with a detailed explanation of the purpose and procedure of the study. The questionnaire form, BDI, and MSPSS used for the data collection were filled in by the researchers using face-to-face interviews with the pregnant women in a separate and quiet room. If the pregnant women were unable to complete the questionnaire form on their own, the researchers read out the questionnaire items to the women and recorded the answers. The questionnaires took 20 - 30 minutes to be completed.

3.5. Statistical Analysis

The SPSS 17.0 was used for statistical analysis. The parametric conditions were evaluated according to the sample size. One-sample Kolmogorov-Smirnov test was used to determine normal distribution of the data. In the statistical evaluation, some characteristics of the pregnant women (age, education, etc.) and mean BDI score were found not

to conform to the normal distribution. Data were evaluated using the Mann-Whitney U, Kruskal-Wallis tests, and the percentage, mean, standard deviation, median, mean rank, minimum and maximum values were also calculated. The relationship between pregnant women BDI total scores and social support and subscale total score was evaluated using the Pearson correlation analysis. P value less than 0.05 is considered statistically significant.

3.6. Ethical Consideration

The study was approved by the Provincial Directorate of Health (Reg.No. B-10-4-ISM-4-61-00-01/251/17, 2008). Written informed consent was obtained from pregnant women, and the study protocol conformed to the ethical guidelines of the 1975 Declaration of Helsinki as reflected in a prior approval by the institution of human research committee. The aim of the research was explained to the pregnant women and they were informed that if they preferred not to continue, they could withdraw from the study any time they wished. After these explanations, 266 pregnant women consented to participate in the study voluntarily.

4. Results

The mean age of the participating women was 26.54 ± 4.49 years. Of studied pregnant women, 84.9% were housewives, 54.5% had primary school or secondary school certificates, 51.9% were primigravida, and 68.8% were in the third trimester.

Table 1 presents the distribution of depressive symptom severity and the mean BDI scores of the pregnant women. The mean BDI scores of the pregnant women was found to be 11.12 ± 6.65 . Depression symptom severity of 18.2% of the pregnant women was at a level that required treatment and the mean BDI score in this group was 21.62 ± 5.24 (Table 1).

The effect of sociodemographic characteristics of the pregnant women on the mean BDI score is presented in Table 2. There were significant differences between the mean BDI scores and variables of educational degrees, employment status and husbands' educational level, among the groups ($P < 0.05$), whereas no difference existed between mean BDI scores and variables of age, husbands' occupation, perceived economical income, length of marriage and family type among the groups ($P > 0.05$) (Table 2).

Table 1. Distribution of Depressive Symptom Severity and Mean Beck Depression Inventory Scores of the Pregnant Women ^{a,b}

Depressive Symptom Severity	Values	BDI Score
≤ 16 points	216 (81.2)	8.68 ± 4.09
≥ 17 points	50 (18.8)	21.62 ± 5.24
Total	266 (100.0)	11.12 ± 6.65

^a Abbreviation: BDI, beck depression inventory.

^b Data are presented as No. (%) or mean \pm SD.

Table 2. The Effect of Sociodemographic Characteristics of the Pregnant Women on Mean Beck Depression Inventory Score

Sociodemographic Characteristics	Median	Mean Rank	Min-Max	Statistics	P Value
Age, y				KW:1.373 ^a	0.24
15 - 19	9.00	129.54	1 - 32		
20 - 24	11.50	147.26	1 - 31		
25 - 29	9.00	127.00	1 - 34		
30 - 34	9.00	120.06	1 - 27		
35 ≥	13.00	151.50	1 - 34		
Educational level				KW:8.887 ^a	0.01
Primary School- Secondary School	11.00	143.35	1 - 34		
High School	10.00	127.56	1 - 27		
University	7.00	94.65	1 - 31		
Employment Status				MU:3257.000 ^b	0.06
Employed	10.00	111.06	1 - 34		
Unemployed	9.00	136.90	1 - 31		
Educational Status of Husbands				KW:8.153 ^a	0.01
Primary School Graduate	11.00	147.83	1 - 34		
High School Graduate	10.00	127.54	1 - 34		
University Graduate	9.00	112.98	1 - 34		
Occupation of Husbands				MU:6870.00 ^b	0.53
Civil servant	9.50	128.90	1 - 30		
Worker	10.50	135.34	1 - 34		
Perceived Economical Income				KW:2.411 ^a	0.30
Good	8.50	114.17	1 - 34		
Moderate	9.00	120.87	4 - 16		
Bad	10.00	136.66	1 - 27		
Length of Marriage, y				KW:2.070 ^a	0.35
≥ 4	10.00	130.91	1 - 32		
5 - 9	11.50	143.94	1 - 34		
≥ 10	9.00	123.79	3 - 27		
Type of Marriage				KW:1.292 ^a	0.52
Disapproved Marriage	12.00	146.62	1 - 34		
Arranged Marriage	10.00	132.34	1 - 34		
Approved Marriage	9.00	129.27	1 - 24		
Family Type				MU:4587.00 ^b	0.06
Nuclear Family	10.00	129.33	1 - 34		
Extended Family	12.00	151.06	1 - 32		

^a Kruskal-Wallis Test.^b Mann-Whitney U Test.

The effects of obstetric characteristics of the pregnant women upon mean BDI scores are presented in Table 3. There were statistically significant differences between mean BDI scores and variables of having an undesired pregnancy, having a chronic disease before pregnancy, experiencing pregnancy-related problems, having a

child with disability or having relatives whose children were disabled ($P < 0.05$). However, the mean BDI scores of those who had a miscarriage, cesarean delivery, felt unready for motherhood, and those who knew the sex of the baby but were dissatisfied with it were low though not statistically significant ($P > 0.05$) (Table 3).

Table 3. The Effects of Obstetric Characteristics of the Pregnant Women on Mean Beck Depression Inventory Score

Obstetric Characteristics	Median	Mean Rank	Min-Max	Statistic	P Value
Planning Pregnancy				MU:1929.000 ^a	0.00
Yes/planned pregnancy	10.00	128.54	1 - 34		
No/unplanned pregnancy	15.50	179.31	3 - 30		
Miscarriage				MU:3833.000 ^a	0.13
Yes	11.50	149.68	1 - 31		
No	10.00	130.04	1 - 34		
Presence of chronic disease before pregnancy				MU:3140.000 ^a	0.00
Yes	15.00	166.49	1 - 34		
No	10.00	127.83	1 - 34		
Pregnancy-related problems				MU:4910.500 ^a	0.00
Yes	11.00	148.52	1 - 31		
No	8.00	100.96	1 - 28		
Pregnancy Trimester				KW:2.478 ^b	0.29
First Trimester	11.00	140.71	1 - 31		
Second Trimester	9.00	117.48	1 - 31		
Third Trimester	10.00	135.94	1 - 34		
Type of Birth				KW:1.375 ^b	0.50
Vaginal Birth	10.00	134.24	2 - 34		
Cesarean delivery	12.50	144.93	1 - 34		
No birth	9.00	129.41	1 - 32		
Readiness for motherhood				KW:5.377 ^b	0.06
I am absolutely ready	10.00	128.42	1 - 34		
I do not feel ready	17.00	177.64	1 - 31		
I am not sure	11.00	143.15	1 - 32		
Having a child with disability or having relatives who had a child with disability				MU:6036.500 ^a	0.08
Yes	11.50	146.66	1 - 34		
No	10.00	128.62	1 - 34		
Knowing the sex of the baby and Satisfaction				KW:1.961 ^b	0.58
I do not know. I am satisfied	10.00	131.44	1 - 34		
I know. I am satisfied	10.00	131.06	1 - 32		
I know. I am not satisfied	13.50	163.75	4 - 34		
I know. It does not make any difference	11.00	139.32	1 - 34		

^a Mann-Whitney U Test.

^b Kruskal-Wallis Test.

Table 4 showed the effect of some special situations of the pregnant women upon the mean BDI score. The correlation between smoking during pregnancy and the mean BDI score was statistically significant ($P < 0.05$). However, mean BDI scores were high, though not statistically significant, among pregnant women whose type of pregnancy was different, were exposed to physical-psychological violence by their husbands, were betrayed by their husbands, and those that did not like their appearance due

to weight gain during pregnancy ($P > 0.05$) (Table 4).

Table 5 presented the correlation between MSPSS scores and mean BDI scores. The total MSPSS score of the pregnant women was 67.89 ± 14.26 . The highest perceived social support of the pregnant women came from significant others/husband (24.63 ± 5.29), family (24.10 ± 5.59) and friends (19.22 ± 7.19). A high significant correlation existed between the mean total MSPSS score and the mean BDI score of the pregnant women ($P < 0.001$) (Table 5).

Table 4. The Effect of Some Special Situations of the Pregnant Women on Mean Beck Depression Inventory Score

Some Special Situations in Pregnancy	Median	Mean Rank	Min-Max	Statistics	P Value
Type of pregnancy				MU:1256.500 ^a	0.15
Natural	10.00	135.03	1 - 34		
Assisted Reproductive Techniques (IVF)	9.00	103.65	4 - 14		
Smoking during pregnancy				KW:16.166 ^b	0.00
I never smoked	9.00	126.50	8 - 34		
I smoked during my pregnancy	13.00	185.28	1 - 34		
I quit smoking during a period of pregnancy	16.00	184.34	2 - 28		
Being subjected to physical-psychological violence by husband during pregnancy				MU:2591.500 ^a	0.25
Yes	11.00	150.34	2 - 34		
No	10.00	131.76	1 - 32		
Betrayal by husband				MU:1002.00 ^a	0.24
My husband did not betray me	10.00	132.41	1 - 34		
My husband betrayed me	11.50	161.30	4 - 34		
Opinions about weight gain during pregnancy				KW:4.391 ^b	0.11
I consider it normal	10.00	128.71	1 - 34		
I am gaining much weight and I do not find myself attractive	11.00	153.27	2 - 27		
I cannot assess weight gain because I am at the beginning of pregnancy	9.5	127.63	1 - 27		

^a Mann-Whitney U Test.

^b Kruskal-Wallis Test.

Table 5. The Correlation Between MSPSS Scores and Mean Beck Depression Inventory Scores^a

MSPSS	Mean MSPSS Score	The Cronbachs' α Coefficient (Internal Consistency)	r^b	P Value ^c
Subscales				
Family Total Score	24.10 ± 5.59	0.86	-0.329	0.000
Friend Total Score	19.22 ± 7.19	0.86	-0.221	0.000
Significant other/husband Total Score	24.63 ± 5.29	0.84	-0.258	0.000
Total Scale Score	67.89 ± 14.26	0.88	-0.338	0.000

^a Abbreviations: MSPSS, multidimensional scale of perceived social support.

^b Found to be extremely and negatively significant. using the Pearson correlation analysis.

^c The statistical evaluation was performed.

5. Discussion

Depression, one of the frequently seen health problems among women, is experienced by women in fecundity periods and its incidence increases with pregnancy. In the studies that investigated the incidence of depression during pregnancy in different cultures, the rate of depression was found to be 7.5% in China, 8.1% in Korea, 17.9% in Hungary, 30% in Canada, 20% in the USA, and 19.6% in Brazil (5, 11-14, 31). As for Turkey, the incidence of depression during pregnancy ranges from 12% to 36% (1, 2, 15). Our study detected an 18.2% rate in the type of pregnancy depression that required medical treatment. The depression level detected by the current study and mean depression scores were similar to some studies while different from others; the reason for this discrepancy may be due to the different culture of the studied societies and or the use of the different measurement methods to detect depression.

Sociodemographic factors may affect depression during pregnancy. It is emphasized in some studies that these factors, including age, low socioeconomic status, negative life experiences, lack of a job with satisfactory income, family problems, low educational status of pregnant women and their husbands augment the severity of the depression symptoms (20, 32-34). In our study, the educational status of the pregnant women and their husbands as well as the employment status of the pregnant woman were detected as the factors that increased the severity of the depression symptoms. Similarly, Bodecs et al. (11), Bunevicius et al. (24), and Lancaster et al. (34) noted that pregnancy depression was seen more among pregnant women who had low educational level and worked at a job with a unsatisfactory income.

Current or past history of pregnancy (miscarriage or abortion), unplanned pregnancy, having a chronic disease and emotional and physical problems experienced during pregnancy are obstetric risk factors for pregnancy depression (2, 8, 20, 25). Similar to the literature, our study indicated that unplanned pregnancy, having a chronic disease and pregnancy-related problems increased the severity of depression among pregnant women ($P < 0.05$). Many studies highlighted that pregnancy depression is found more among women who have an unplanned and undesired pregnancy, have a chronic disease and face problems in the current pregnancy (15, 18, 24, 35). Our study pointed to the fact that pregnant women with a disabled child or relatives with child disability had increased depression symptom severity. The literature states that pregnant women who themselves have a child with mental/physical disability or have first degree relatives or close friends having a child with mental/physical disability is an important risk factor that affects pregnancy depression (21). In the studies of Raina et al. (36), Karadavut and Uneri (26), and Pistav Akmeshe et al. (37) in which mothers with children with disability were investigated, it was found that these mothers had

a trait anxiety level above the average level because ambiguities related to what kind of problems the disabled children will meet in the future may cause trait anxiety and depression in the family.

The type of marriage may be regarded as a risk factor for pregnancy depression. In the literature review, no study was found in which the type of marriage (disapproved marriage: running away and getting married to somebody that the family members are opposed to; or approved marriage: getting married to somebody that the family members approve of) had been examined. In our study, nearly 14% of the participating women were in a disapproved marriage and their mean BDI scores were found to be higher than in the other type of marriage. If the fact that these pregnant women in disapproved marriages were adolescent at the time of the marriage is taken into consideration, the higher mean BDI scores of these women may relate to the possibility that they had poor/insufficient social support from their families.

Weight gain during pregnancy, experiencing domestic violence, history of physical, emotional and sexual violence, betrayal by the husband, smoking, and alcohol and substance use are some of the social factors that affect pregnancy depression (14, 21, 38, 39). The studies conducted show that weight gain during pregnancy causes dissatisfaction among pregnant women and consequently depressive symptoms increase during pregnancy (4, 39, 40). Elsenbruch et al. (18), Lancaster et al. (34), Karmaliani et al. (38), and Leigh et al. (41) reported that depression was seen more among women who gained excessive weight, had smoked and were subjected to psychological and physical violence during pregnancy. Likewise, in our study, it was found that a statistically significant correlation existed between smoking and depression symptom levels ($P < 0.05$). Depression symptom severity was higher among pregnant women who were subjected to psychological and physical violence, betrayed by their husbands, gained excessive weight during pregnancy and not satisfied with it; yet, the differences were not statistically significant.

Social support provided by the husband, family and/or friends during pregnancy comforts pregnant women emotionally and mentally and enables them to use social sources more, helping them to cope with stressors and anxiety more easily and paving the way for their transition into motherhood roles (1, 17, 19, 25, 35). In the similar studies, it is emphasized that there is a correlation between social support during pregnancy and depression and anxiety levels and also lack of social support augments levels of depression and anxiety (1, 3, 19, 20). The total MSPSS score of the pregnant women in our study was 67.89 ± 14.26 . It was found out that the pregnant women got the highest social support first from significant persons in their lives (their husbands) (24.63 ± 5.29), second from their families (24.10 ± 5.59), and finally from their

friends (19.22 ± 7.19). Furthermore, the social support scores obtained from these 3 groups affected mean BDI scores of the pregnant women ($P < 0.001$). This finding was in agreement with the literature.

To conclude, this means that mean BDI scores decrease as MSPSS scores increase. In other words as the perceived social support increases, the psychological problems caused by stressful life events decrease. In a study in Canada, it was reported that both pregnancy depression risks and postpartum depression risks considerably increased among those with low social support levels during pregnancy (17). The prospective study of Elsenbruch et al. (18) carried out in Germany measured the social support scores of 896 pregnant women who were in the first trimester of pregnancy. Both the pregnant women and fetus were closely followed until the end of birth. After this follow up, it was found that the pregnant women with low social support had higher levels of depression symptoms and a decreased quality of life and smoked more during the pregnancy compared to those with high social support. In the randomized study of Leigh et al. (41) conducted in Australia on 367 pregnant women, it was found that depressive symptom levels were higher among the women who had poor or no social support compared to those with moderate and high levels of social support.

In conclusion, it was found that one-fifth of the pregnant women had a depressive symptom level (≥ 17 and 18.8%) that required medical treatment and such sociodemographic and obstetric factors as the pregnant women's educational level, employment status, husbands' educational level, presence of a chronic disease, having problems during pregnancy, whether the pregnancy was planned or not, and having a child with disability or having relatives who had children with disability affect severity of depressive symptoms. In addition, a significant correlation was found between the social support given during pregnancy and decreased depressive symptom severity.

Our study had some limitations too. The study was conducted in one city with a selected group of women who resided in the city center and therefore, its generalizability is considerably limited as the sample group was small. Also, the other limitation of the study was that detailed psychiatric examinations and diagnosis were not performed but only the women's depression and anxiety levels were measured with scales and inventories. We are of the opinion, however, that the study will shed light on relevant studies in the future as it provides information about the situation and frequency of depression in the pregnant women of one city in our country.

Acknowledgements

The authors are grateful to the studied women for their participation in this study. We would also like to thank the director of the college for her support and cooperation and Paula Maria Knauer for editorial support.

Authors' Contributions

Songul Aktas developed the original idea and the protocol, collected data, abstracted and analyzed data, wrote the manuscript, and was the guarantor. Kiyimet Yesilcicek Calik contributed to the development of the protocol, collected data, abstracted data, and prepared the manuscript.

References

1. Calik, Y. K., Aktas, S. Depression during pregnancy: incidence, risk factors and treatment. *Contemp Approaches Psychiatry*. 2013;**3**(1):142-62.
2. Marakoglu K, Sahsivar, S. Depression in pregnancy. *Turkiye Clinics Med Sci*. 2008;**28**:525-32.
3. Liu L, Setse R, Grogan R, Powe NR, Nicholson WK. The effect of depression symptoms and social support on black-white differences in health-related quality of life in early pregnancy: the health status in pregnancy (HIP) study. *BMC Pregnancy Childbirth*. 2013;**13**:125.
4. Dipietro JA, Millet S, Costigan KA, Gurewitsch E, Caulfield LE. Psychosocial influences on weight gain attitudes and behaviors during pregnancy. *J Am Diet Assoc*. 2003;**103**(10):1314-9.
5. Faisal-Cury A, Rossi Menezes P. Prevalence of anxiety and depression during pregnancy in a private setting sample. *Arch Womens Ment Health*. 2007;**10**(1):25-32.
6. Bowen A, Muhajarine N. Antenatal depression. *Can Nurse*. 2006;**102**(9):26-30.
7. Diego MA, Field T, Hernandez-Reif M, Schanberg S, Kuhn C, Gonzalez-Quintero VH. Prenatal depression restricts fetal growth. *Early Hum Dev*. 2009;**85**(1):65-70.
8. Muzik M, Marcus SM, Heringhausen JE, Flynn H. When depression complicates childbearing: guidelines for screening and treatment during antenatal and postpartum obstetric care. *Obstet Gynecol Clin North Am*. 2009;**36**(4):771-88.
9. Bennett HA, Einarson A, Taddio A, Koren G, Einarson TR. Prevalence of depression during pregnancy: systematic review. *Obstet Gynecol*. 2004;**103**(4):698-709.
10. Field T, Diego M, Hernandez-Reif M, Schanberg S, Kuhn C, Yando R, et al. Pregnancy anxiety and comorbid depression and anger: effects on the fetus and neonate. *Depress Anxiety*. 2003;**17**(3):140-51.
11. Bodecs T, Horvath B, Kovacs L, Diffellne Nemeth M, Sandor J. [Prevalence of depression and anxiety in early pregnancy on a population based Hungarian sample]. *Orv Hetil*. 2009;**150**(41):1888-93.
12. Da Costa D, Larouche J, Dritsa M, Brender W. Psychosocial correlates of prepartum and postpartum depressed mood. *J Affect Disord*. 2000;**59**(1):31-40.
13. Kurki T, Hiilesmaa V, Raitasalo R, Mattila H, Ylikorkala O. Depression and anxiety in early pregnancy and risk for preeclampsia. *Obstet Gynecol*. 2000;**95**(4):487-90.
14. Lovisi GM, Lopez JR, Coutinho ES, Patel V. Poverty, violence and depression during pregnancy: a survey of mothers attending a public hospital in Brazil. *Psychol Med*. 2005;**35**(10):1485-92.
15. Karacam Z, Ancel G. Depression, anxiety and influencing factors in pregnancy: a study in a Turkish population. *Midwifery*. 2009;**25**(4):344-56.
16. Cohen S. Social relationships and health. *Am Psychol*. 2004;**59**(8):676-84.
17. Xie RH, He G, Koszycki D, Walker M, Wen SW. Prenatal social support, postnatal social support, and postpartum depression. *Ann Epidemiol*. 2009;**19**(9):637-43.
18. Elsenbruch S, Benson S, Rucke M, Rose M, Dudenhausen J, Pincus-Knackstedt MK, et al. Social support during pregnancy: effects on maternal depressive symptoms, smoking and pregnancy outcome. *Hum Reprod*. 2007;**22**(3):869-77.
19. Gjerdingen DK, Froberg DG, Fontaine P. The effects of social support on women's health during pregnancy, labor and delivery, and the postpartum period. *Fam Med*. 1991;**23**(5):370-5.

20. Bennett HA, Einarson A, Taddio A, Koren G, Einarson TR. Depression during Pregnancy : Overview of Clinical Factors. *Clin Drug Investig*. 2004;**24**(3):157-79.
21. Raynor MD, Oates MR. Myles Text For Midwives. In: Fraser DM, Cooper MA, editors. *Perinatal Mental Health*. London: Elsevier Limited; 2009. pp. 679-703.
22. Ekiz D. Scientific research methods. 2nd ed. Ankara: Anı Publication; 2009.
23. Sonmez V, Alacapinar F. G. Illustrated scientific research methods. 1st. Ankara: Anı Publication; 2013.
24. Bunevicius R, Kusminskas L, Bunevicius A, Nadisauskiene RJ, Jurieniene K, Pop VJ. Psychosocial risk factors for depression during pregnancy. *Acta Obstet Gynecol Scand*. 2009;**88**(5):599-605.
25. Marcus SM. Depression during pregnancy: rates, risks and consequences--Motherisk Update 2008. *Can J Clin Pharmacol*. 2009;**16**(1):e15-22.
26. Karadavut KI, Uneri SO. Burnout, depression and anxiety levels in mothers of infants with brachial plexus injury and the effects of recovery on mothers' mental health. *Eur J Obstet Gynecol Reprod Biol*. 2011;**157**(1):43-7.
27. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch General Psychiatr*. 1961;**4**:561-71.
28. Hisli N. A study on the validity of Beck's Depression Inventory. *Psychol J*. 1988;**6**(22):118-22.
29. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support. *J Pers Assess*. 1988;**52**(1):30-41.
30. Eker D, Arkar H, Yaldiz H. Generality of support sources and psychometric properties of a scale of perceived social support in Turkey. *Soc Psychiatry Psychiatr Epidemiol*. 2000;**35**(5):228-33.
31. Lee DT, Chan SS, Sahota DS, Yip AS, Tsui M, Chung TK. A prevalence study of antenatal depression among Chinese women. *J Affect Disord*. 2004;**82**(1):93-9.
32. Figueiredo B, Pacheco A, Costa R. Depression during pregnancy and the postpartum period in adolescent and adult Portuguese mothers. *Arch Womens Ment Health*. 2007;**10**(3):103-9.
33. Spinelli MG. Antepartum and postpartum depression. *J Genet Specif Med*. 1998;**1**(2):33-6.
34. Lancaster CA, Gold KJ, Flynn HA, Yoo H, Marcus SM, Davis MM. Risk factors for depressive symptoms during pregnancy: a systematic review. *Am J Obstet Gynecol*. 2010;**202**(1):5-14.
35. Highet N, Stevenson AL, Purtell C, Coo S. Qualitative insights into women's personal experiences of perinatal depression and anxiety. *Women Birth*. 2014;**27**(3):179-84.
36. Raina P, O'Donnell M, Rosenbaum P, Brehaut J, Walter SD, Russell D, et al. The health and well-being of caregivers of children with cerebral palsy. *Pediatrics*. 2005;**115**(6):e626-36.
37. Pistav Akmese P, Mutlu A, Gunel MK. Evaluation of Anxiety Levels of the mothers that had children with cerebral paralysis. *Ankara Child Health Dis J*. 2007;**50**(4):236-40.
38. Karmaliani R, Asad N, Bann CM, Moss N, McClure EM, Pasha O, et al. Prevalence of anxiety, depression and associated factors among pregnant women of Hyderabad, Pakistan. *Int J Soc Psychiatry*. 2009;**55**(5):414-24.
39. Walker L, Timmerman GM, Kim M, Sterling B. Relationships between body image and depressive symptoms during postpartum in ethnically diverse, low income women. *Women Health*. 2002;**36**(3):101-21.
40. Clark A, Skouteris H, Wertheim EH, Paxton SJ, Milgrom J. The relationship between depression and body dissatisfaction across pregnancy and the postpartum: a prospective study. *J Health Psychol*. 2009;**14**(1):27-35.
41. Leigh B, Milgrom J. Risk factors for antenatal depression, postnatal depression and parenting stress. *BMC Psychiatry*. 2008;**8**:24.