

ORIGINAL ARTICLE

Medicine Science 2022;11(2):855-8

Comparison of anxiety and depression levels between healthy pregnant and pregnant with gestational diabetes

 Ahmet Ziya Sahin¹,  Cagdas Demiroglu²,  Yunus Emre Topdagi³

¹Gaziantep University, Faculty of Medicine, Department of Nephrology, Gaziantep, Turkey

²Sanko University, Faculty of Medicine, Department of Gynecology and Obstetrics, Gaziantep, Turkey

³Zeynep Kamil Training and Research Hospital, Department of Gynecology and Obstetrics, Istanbul, Turkey

Received 10 November 2021; Accepted 22 February 2022

Available online 27.04.2022 with doi: 10.5455/medscience.2021.11.369

Copyright@Author(s) - Available online at www.medicinescience.org

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.



Abstract

This study investigated the anxiety and depression levels in hospitalized healthy pregnant and pregnant with gestational diabetes mellitus (GDM) before the cesarean section. This case control study included 64 healthy pregnant (control) and 26 pregnant with GDM (case). Patients were assessed with the form of a socio-demographic and clinical characteristic and Hospital Anxiety Depression Scale (HADS). The mean age was 35.5±5.1 years in the case group and 29.4±4.3 in the control group. There was a significant difference between pregnant women with GDM and healthy pregnant in terms of total anxiety, total depression, psychomotor agitation, restlessness, laughing and seeing funny things, and being cheerful. 21% of the pregnant with GDM and 15% of the healthy pregnant had anxiety. Also, 34% of the pregnant with GDM and 23% of the controls had depression. Anxiety and depressive symptoms should be considered for hospitalized pregnant women with GDM before the cesarean section.

Keywords: Gestational diabetes mellitus, anxiety, depression, cesarean section

Introduction

Even if there is no health problem, pregnancy is a stressful and complex process biologically, physiologically and psychologically. Many neuroendocrine and psychosocial changes occur in women during pregnancy. While exacerbation of existing psychiatric symptoms may occur during this period, the first psychiatric symptoms may also occur during pregnancy [1]. For these reasons, the pregnancy and maternity period is a process in which women's susceptibility to psychiatric diseases such as depression and anxiety disorder may increase [2]. The incidence of depression in pregnant women has been reported as 7-21% [3], and in some of the studies conducted in our country, the frequency of depressive symptoms in pregnant women was found to be between 12-36% [4]. Another important problem encountered in pregnant women is anxiety disorders. Pregnancy itself is a source of anxiety for a woman [5].

Anxiety disorders are more common in women than men in the normal population. Anxiety disorders can be seen in 30% of women during their reproductive period. Anxiety disorder was found in 6.6% of pregnant women in a study [2]. It has been reported that emotional stress, especially depression and anxiety, increases pregnancy and birth complications, negatively affect the health of the newborn, cause premature birth and low birth weight [6].

Gestational diabetes mellitus (GDM) is a glucose intolerance defect that begins in the pregnancy process or is diagnosed during pregnancy firstly [7]. Although the incidence of GDM differs according to race, it increases with age [8]. GDM occurs when the adaptation process of the pancreas could not meet the increased insulin requirement during pregnancy. The need for insulin increases approximately 40-70% in the last trimester [9]. Fetal complications like; neonatal hypoglycemia, shoulder dystocia, increased frequency of operative delivery and birth trauma can be seen in pregnancies with GDM. Moreover; preeclampsia, cesarean delivery and other related complications and type 2 diabetes mellitus (DM) occur more frequently in the coming years. Early diagnosis and treatment of GDM are vital because it can cause maternal and/or fetal complications [10].

*Corresponding Author: Ahmet Ziya Sahin, Gaziantep University, Faculty of Medicine, Department of Nephrology, Gaziantep, Turkey
E-mail: drahmetziya@hotmail.com

DM itself is a cause of stress. This may be even more pronounced in high-risk pregnancies such as GDM [11]. It has been reported that GDM can cause various problems by increasing anxiety levels in patients, and anxiety levels of those patients can be reduced with an effective control for glycemia[12]. When the literature is reviewed, it is seen that there are a limited number of studies evaluating anxiety and depression levels in patients with GDM. In this study, it was aimed to investigate the anxiety and depression levels of individuals with GDM before the cesarean section, to compare them with healthy pregnant women and to contribute to the literature.

Materials and Methods

The study was conducted with women whose pregnancy follow ups have been made in Gynecology and Obstetrics Clinic of SANKO University between June 01 and September 01,2020 and met the inclusion criteria for this study. Inclusion criteria were; being diagnosed with GDM for the case group, or having a healthy pregnancy for the control group, being between the ages of 18 and 45, C/S decision has been made and to be hospitalized 1 day before the delivery and to be able to fill out the scales at this time, and being voluntarily agree to participate in the study. GDM diagnosis of the patients had been made in one step with 75g OGTT. It was based on the recommended values of the International Association of Diabetes and Pregnancy Working Groups for 75g OGTT. (IADPSG). GDM was considered to be diagnosed by a single high value. [13]. Exclusion criteria in the study were; illiteracy, having a serious psychiatric or neurological disease that may affect decision-making, not having the mental capacity to understand the questions asked, having a major additional psychiatric disorder (Schizophrenia, Bipolar Disorder, Mental Retardation, Alcohol-Substance Addiction). The aim of the study was explained to the patients, and informed consent forms were obtained from the participants before the study. This study was approved by the ethics committee of SANKO University University with the reference number 2020/08 and was conducted in accordance with the Declaration of Helsinki.

Patients were assessed with a socio-demographic and clinical characteristics form (Age, abortus, gravid/parity numbers, educational status, working status and body mass index). Hospital Anxiety Depression Scale was used for assessment. This self assessment forms were filled out during hospitalization before the C/S.

The Hospital Anxiety Depression Scale (HADS) : It was developed by Zigmond and Snaith in 1983 [14]. It measures anxiety and depression symptoms and filled by the individual him/herself and is frequently used in the hospital environment. It has two subscales that evaluate anxiety and depression separately. The Turkish version of the scale's cut-off points were set at 10 for the anxiety and 7 for the depression subscale. The Turkish translation was validated by Aydemir et al [15].

Statistical analyses

Descriptive statistics were presented in mean value for age and median values for the other abnormally distributed values and interquartile ranges (IQR) (25% to 75%) for the quantitative variables, and frequencies and percentages for the categorical

variables. One-sample Kolmogorov–Smirnov and Shapiro–Wilk tests were used to determine normality. Spearman's (rs) correlation analysis was used to analyze the relationship between variables. The effects of mixing factors such as age, gravida and BMI on anxiety and depression of individuals were analyzed using univariate analysis of covariance (ANCOVA). All of the analyses were done with SPSS statistical software. (IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp).

Results

The demographic-clinical characteristics of participants are summarized in Table 1. 26 (28%) of the 90 participants had GDM (case group). The mean age was 35.5±5.1 years in case group and 29.4±4.3 in control group. The mean BMI was 22.2±3.9 in case group and 24.3±3.3 in control group.

There was a significant difference between pregnant with GDM and healthy pregnant in terms of total anxiety, total depression, psychomotor agitation, restless, laughing and seeing funny things, and cheerful. Comparison between healthy pregnancies and GDM in terms of HADS is summarized in Table 2.

According to cut off values of HADS; 21% of the pregnant with GDM and 15% of the healthy pregnant had anxiety. Also 34% of the pregnant with GDM and 23% of the controls had depression.

Table 1. Descriptive Statistics of the participants

Descriptives	Case(26)	Control(64)	P Value
Age (years)	35.5±5.1	29.4±4.3	0.001
BMI (kg/m ²)	26.62±6.30	25.06±5.11	0.31
Gravida	4(2to5)	2(1 to 2.75)	0.001
Parity	2(1.75 to 3)	1(1 to 2)	0.001
Abortus	0(0 to2)	0(0 to 0)	0.03
Education (years)	16(12 to 16)	16(12 to 16)	0.74
Smoking Yes/No	2/24	2/62	0.29
Working/not working	8/18	30/34	0.43
HADS and subdimensions	Case(26)	Control(64)	PValue
Anxiety total	6(2 to 8)	3(2 to 4)	0.05*
Tense or wound up	0(0 to1)	0(0 to1)	1.0
Feeling as if something bad happen	0(0 to2)	0(0 to1)	0.21
Worrying thoughts	0.5(0 to 1.75)	0(0 to1)	0.28

Median and interquartile ranges (IQR) as (25% to 75%) were given for gravida, parita, abortus and education. Mean±standart deviation were given for age and BMI

Table 2. Comparison between healthy pregnancies and GDM in terms of HADS

Sit ease and feel relaxed	2 (0.25 to 2)	0.5 (0 to 2)	0.04*
Feeling like butterflies in stomach	0 (0 to 1)	0 (0 to 1)	0.35
Restless	0 (0 to 2)	0 (0 to 0)	0.001*
Panic	0 (0 to 1)	0.5 (0 to 1.75)	0.95
Depression total	5 (4 to 7.75)	4.5 (1.25 to 6.75)	0.03*
Enjoying things that he/she used to	0 (0 to 1)	0 (0 to 0.25)	0.49
Laugh and see funny things	0 (0 to 1)	0 (0 to 0)	0.03*
Cheerful	1 (0 to 2.75)	2 (1 to 3)	0.02*
Slowed down	1 (1 to 2)	0.5 (0 to 1.75)	0.06
Lost interest in appearance	0.5 (0 to 1)	0.5 (0 to 1.75)	0.80
Look forward with enjoyment	0 (0 to 1.75)	0 (0 to 0)	0.95
Enjoy a book, radio, TV	0 (0.5 to 1)	0 (0 to 1)	0.29

Discussion

We investigated the anxiety and depression levels in healthy pregnant and pregnant with GDM whose pregnancy follow ups were made in SANKO University Gynecology and Obstetrics Clinic one day before the cesarean section. We found that total anxiety and total depression scores were higher in pregnant women with GDM. In addition, when each item of the scale was examined, it was found that some anxiety and depressive symptoms were more dominant in individuals with GDM.

In addition to higher anxiety-depressive symptoms in GDM women, the rate of probable depression and anxiety disorder were found to be 34%, 21%, respectively. Anxiety symptoms were found to be prevalent in 39.9% of women with GDM, followed by depressive symptoms at 12.5 percent and stress symptoms at 10.6 percent, according to a study. [16]. The importance of our study is that these scales were applied before elective C/S. The prospect of surgical procedures is stressful and anxiety-inducing [17]. Although the rate of anxiety is higher in emergency operations, it has been reported that the rate of anxiety is quite high in both cases in obstetric patients requiring elective or emergency surgery [18]. Considering the relationship between preoperative anxiety and postoperative pain, it may be protective to evaluate individuals with GDM in terms of anxiety and depressive symptoms.

DM itself may be the reason why GDM patients in our study showed higher levels of anxiety and depression symptoms under similar conditions with normal pregnant women. The prevalence of anxiety and depression symptoms in diabetic patients is quite high compared to the general population sample [19]. When the underlying mechanism is evaluated, overactivation of innate immunity, which leads to a cytokine-mediated inflammatory

response and possibly disruption of the hypothalamic-pituitary-adrenal axis, is suggested to be a molecular link between depression and type 2 DM. [20]. These pathways can contribute to insulin resistance, depression, and also increased risk of type 2 DM, and higher mortality throughout one's life. [20]. In addition, anxiety may be the reason for the individual's greater response to the disease, as she/he perceives DM as a threat, a discomfort [21].

When examining the symptoms of total depression and anxiety in individuals with GDM, it is recommended to consider the following symptoms, which are especially dominant in case group. Pregnant women with GDM were more troubled in terms of sitting ease and feeling relaxed compared to healthy pregnant women, felt more restless than controls, as if they always had to do something. Pregnant women with GDM had more difficulty in laughing and seeing the funny things compared to healthy pregnant women. Lastly, controls were more cheerful than pregnant women with GDM.

One of the limitations of this study is that it is cross-sectional. Therefore, the existence of causal relationships could not be discussed. Another limitation is that the questionnaires are self-evaluation and psychopathologies cannot be directly detected by structured interview. In addition, the low number of participants is also a limitation. Although the fact that the ages of the patients are different from each other seems like a limitation, this is an expected situation considering that the rate of GDM increases with age. In addition, the evaluation of both groups in conditions where situational anxiety is similar as one day before elective C/S is the strength of the study.

Conclusion

This study put forth that pregnant women with GDM had higher risk for anxiety and depression before elective C/S. The rate of probable depression and anxiety disorder were 34%, 21%, respectively. Psychomotor agitation, restless, less laughing and less seeing funny things, and being less cheerful were the predominant anxiety and depressive symptoms. It is recommended to provide psychological support to decrease anxiety and depressive symptoms for individuals with GDM to prevent postoperative complications.

Conflict of interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical approval

This study was approved by the ethics committee of SANKO University with the reference number 2020/08.

References

1. Levey AS, De Jong PE, Coresh J, et al. The definition, classification, and prognosis of chronic kidney disease: a KDIGO Controversies Conference report. *Kidney Int.* 2011;80:17-28.
2. Andersson L, Sundström-Poromaa I, Bixo M, et al. Point prevalence of psychiatric disorders during the second trimester of pregnancy: a population-based study. *Am J Obstet Gynecol.* 2003;189:148-54.
3. Lee AM, Lam SK, Lau SMSM, et al. Prevalence, course, and risk factors for antenatal anxiety and depression. *Obstet Gynecol.* 2007;110:1102-12.
4. Karaçam Z, Ançel G. Depression, anxiety and influencing factors in

- pregnancy: a study in a Turkish population. *Midwifery*. 2009;25:344-56.
5. Kuğu N, Akyüz G. Psychological Situation in Pregnancy . *Cumhuriyet Medical Journal*. 2001;23:61-4.
 6. Schetter CD, Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr Opin Psychiatry*. 2012;25:141.
 7. Association AD. 2. Classification and diagnosis of diabetes: standards of medical care in diabetes-2018. *Diabetes Care*. 2018;41:13-27.
 8. Li Y, Ren X, He L, et al. Maternal age and the risk of gestational diabetes mellitus: a systematic review and meta-analysis of over 120 million participants. *Diabetes Res Clin Pract*. 2020;162:108044.
 9. Özkaya MO, Köse SA. Gestational diabetes: Current status. *Perinatal J*. 2014;22:105-9.
 10. Obstetricians ACo, Gynecologists. Gestational diabetes mellitus. *Practice Bulletin*. 2013;137:1-11.
 11. Güler Ae, Güler Zçd, Budak A, et al. Evaluation of anxiety levels of pregnant women with gestational diabetes mellitus. *Perinatal Journal*. 2020;28:89-94.
 12. Ölçer Z, Oskay Ü. Stress in High-Risk Pregnancies and Coping Methods. *Journal of Education and Research in Nursing*. 2015;12:85-92.
 13. Diabetes IAo, Panel PSGC. International association of diabetes and pregnancy study groups recommendations on the diagnosis and classification of hyperglycemia in pregnancy. *Diabetes Care*. 2010;33:676-82.
 14. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*. 1983;67:361-70.
 15. Aydemir Ö, Guvenir T, Kuey L, et al. Validity and reliability of Turkish version of hospital anxiety and depression scale. *Turk J Psychiatry*. 1997;8:280-7.
 16. Lee KW, Ching SM, Hoo FK, et al. Prevalence and factors associated with depressive, anxiety and stress symptoms among women with gestational diabetes mellitus in tertiary care centres in Malaysia: a cross-sectional study. *BMC Pregnancy Childbirth*. 2019;19:1-11.
 17. Mok E, Wong KY. Effects of music on patient anxiety. *AORN J*. 2003;77:396-410.
 18. Bansal T, Joon A. A comparative study to assess preoperative anxiety in obstetric patients undergoing elective or emergency cesarean section. *Anaesthesia, Pain Int Care*. 2019;25-30.
 19. Collins M, Corcoran P, Perry I. Anxiety and depression symptoms in patients with diabetes. *Diabetic Med*. 2009;26:153-61.
 20. Moulton CD, Pickup JC, Ismail K. The link between depression and diabetes: the search for shared mechanisms. *Lancet Diabetes Endocrinol*. 2015;3:461-71.
 21. Indirawaty SA, Syarif KR, Anugrah R. Literature study of relationship mechanism and anxiety in mellitus diabetes. *Solid State Technol*. 2020;63:18790-4.