ORIGINAL RESEARCH ARTICLE

The effect of depression on reproductive health among women of reproductive age

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Abstract

While the majority of research on depression, which is classified as a mental health disorder, tends to focus on pregnancy, few studies have investigated the relationship and possible effects of depression on reproductive health. This study was conducted with the aim of determining the relationship between depression and reproductive health outcomes in non-pregnant women of reproductive age. This was a case control study that consisted of 301 women who attended gynecology outpatient clinic of a university training and research hospital of South of Turkey between May and November of 2015. This study used the Beck Depression Inventory to evaluate depression level. Data was analyzed using IBM SPSS for Windows, version 21.0. According to the outcomes of this study, 33.9% of the women evaluated were found to have depression. In addition, the findings demonstrated that there is a difference between women with and without depression in terms of reproductive health outcomes. Taking into account the current and past records of psychiatric disorders documented during the treatment of women who were attended to in to gynecological clinics, this study further showed that better gynecological wellness can be achieved using short screening scales that can refer women for early diagnosis and treatment. *(Afr J Reprod Health 2021; 25[5]: 125-132).*

Keywords: Reproductive health, mental health**,** depressive disorder, gynecology, gynecological health

Résumé

Alors que la majorité des recherches sur la dépression, qui est classée comme un trouble de santé mentale, ont tendance à se concentrer sur la grossesse, peu d'études ont étudié la relation et les effets possibles de la dépression sur la santé reproductive. Cette étude a été menée dans le but de déterminer la relation entre la dépression et les résultats en matière de santé reproductive chez les femmes non enceintes en âge de procréer. Il s'agissait d'une étude cas-témoins portant sur 301 femmes ayant fréquenté la clinique gynécologique ambulatoire d'un hôpital universitaire de formation et de recherche du sud de la Turquie entre mai et novembre 2015. Cette étude a utilisé le Beck Depression Inventory pour évaluer le niveau de dépression. Les données ont été analysées à l'aide d'IBM SPSS pour Windows, version 21.0. Selon les résultats de cette étude, 33,9% des femmes évaluées souffraient de dépression. De plus, les résultats ont démontré qu'il existe une différence entre les femmes avec et sans dépression en termes de résultats en matière de santé reproductive. Tenant compte des dossiers actuels et passés de troubles psychiatriques documentés au cours du traitement des femmes qui ont été soignées dans des cliniques gynécologiques, cette étude a en outre montré qu'un meilleur bien-être gynécologique peut être atteint en utilisant des échelles de dépistage courtes qui peuvent orienter les femmes vers un diagnostic et un traitement précoces. *(Afr J Reprod Health 2021; 25[5]: 125-132).*

Mots-clés: Santé reproductive, sante mentale, trouble depressif, gynecologie, sante gynecologique

Introduction

Individuals experience different periods and phases in their life cycles, which include childhood, adolescence, adulthood, and elderly stage. During these periods, the barrage of psychological, physical, and social differences experienced can affect the psychological/mental well-being of an individual[1]. The differences people experience during the reproductive-age life cycle make them more susceptible to psychiatric diseases[1]. As it is stated by World Health Organization's (WHO) definition of health, which is a state of being completely fine in terms of physical, social, and psychological/mental well-being, mental health is one of the primary determinants of one's general health[2]. However, psychiatric/mental health disorders, especially as seen during the

reproductive period, are significant enough to prevent human functionality, creativity, happiness, and life satisfaction[3]. In line with this information, the WHO states that mental health disorders are estimated to cause the most disability in the world[2].

Despite its serious negative impacts on life, mental health is a component of reproductive health that is not generally given priority and is relatively neglected in low- and middle-income countries[3]. One potential explanation for this circumstance could be that the policies addressing reproductive health have focused widely on issues with significant gender differences in the rates of psychiatric/mental health disorders, such as pregnancy-related care and family planning. Furthermore, studies have focused more on the types, diagnosis, definition, prevalence, relationship to other diseases, prevention, and treatment of psychiatric/mental health[1,3–5]. While the majority of research on depression, which is classified as a mental health disorder, tends to focus on pregnancy, childbirth, and postnatal periods of reproductive-age women[6–8],few studies have investigated the relationship and possible effects of depression on gynecological health[4,5]. In this study, emphasis was placed on the need to better understand the relationship between reproductive health and depression in reproductive-age women.

Reproductive events have been suggested to trigger, accentuate, and relate to the onset and course of depression, which is one of the most common mental health disorders[1,2]. Depression also affects women approximately twice as much as men[5,] and it is expected to be the second leading cause of disability-adjusted life years (DALYs) for reproductive-age women by 2020[2]. According to the WHO's Global Burden of Disease Study, major depression is estimated to affect about 8% to 16% of reproductive-age women in the world[1,9]. Additionally, the prevalence of depression in reproductive-age women is predicted to increase in developing countries[1]. In the light of these statistical data, there are many social, psychosocial and hormonal factors that play a role in women experiencing depression[1,4]. Research on depression has reported that about 20% to 25% of women will experience depression throughout their lives and that depression is further underpinned as one of the most widespread causes of non-obstetric hospitalization among women of reproductive age[10]. When evaluating the health status of patients who applied to polyclinics other than psychiatry clinics, it is seen that only the physical diseases in the applied area are determined and psychic problems are often ignored. Studies showing that mental and physical health problems during pregnancy, traumatic birth experiences, high-risk pregnancies, low birth weight outcomes and preterm births are associated with depression[9,11,12], suggest that depression may also be associated with its problems. The period between menarche, which means the start of the first menstruation, and menopause, which means the complete cessation of menstruation, is considered the reproductive age and generally covers the age range of 15-49[3]. This reproductive period has been labeled as a "window of vulnerability" by Soares, which is supported by epidemiological data[13]. It is stated that this vulnerability window may be impacted by changes in lifestyle, sexuality, metabolism, and general health. In addition, it has been reported that mental illnesses become widespread in this sensitive period, which coincides with the women in midlife[14,15]. The increased likelihood of depression in women in midlife is likely to be related to the changing hormonal environment. Gender differences in brain neuroanatomy and neurophysiology may explain why women suffer more from an episode of depression[15]. The relationship between possible reproductive wellness issues and depression confronting reproduction-age women has received scanty attention[16]. On the other hand, depression experienced by women during the reproductive period is known to be a major threat to a good life quality and the ability to sustain family life[17]. Moreover, researchers have explored how depression among women of reproductive age affects somatization (defined as the expression of mental distress and psychosocial stress that causes one or more bodily symptoms)[3,18]. The studies conducted by Prasad et al. (2005) and Patel et al. (2006) indicated that there was a relationship between vaginal discharge, mental disorders experienced by women during this period especially depression, and somatization disorders[19,20]. However, the connection between depression and reproductive health is unclear, as few studies have been conducted in terms of gynecological health[4,5].

Women of reproductive age have a window of vulnerability that is exposed to a variety of problems, including higher mental and physical distress rates, life stage, and impediment to

available opportunities. Based on these reasons, the aim of this study was to determine the relationship between depression and reproductive health outcomes in non-pregnant women of reproductive age.

Methods

Study design

The study adopted a case control study design, which involved women of reproductive age (18–49 years) in a city, south of Turkey. This quantitative study population consisted of women who met the study's inclusion criteria and who applied to the gynecology outpatient clinic of a university training and research hospital between May and November of 2015.

Setting and sample

The present study sample size was calculated using the rate of depression found in the study by Mendonsa and Appaya as it applied to outpatients of the gynecological oncology clinic in a tertiary care hospital[21]. A prevalence rate of 25.7% was recorded, representing the proportion of women with depression in this study. The minimum sample size required for this study, which was calculated using the Kish formula (1965) [n= z^2xp(1-p)/d2] and after adjusting for nonresponse at a rate of 5%, was 295[22]. Reproductive-age women who met the inclusion criteria were recruited from the gynecology outpatient clinic of given hospital, and 301 women were included. The criterias for participating in the study were: 1) women between the ages of 18-49; 2) literate in the Turkish language; 3) at least primary school graduate to be able to read and understand research forms; 4) women without natural or surgical menopause. Some women currently suffering from depression who reported a clinical diagnosis were also excluded from this study.

Data collection

This study used a questionnaire developed by the researchers that included 16 questions about sociodemographic and gynecologic characteristics as well as experience of gynecological symptoms (which included abnormal vaginal discharge, malodor, pelvic organ pain, dysmenorrhea, itching, and so on). Each question was asked by the researchers and marked "Yes" or "None." Any respondent who answered "Yes" to any of the symptoms was considered to have gynecological problems.

This study also used the Beck Depression Inventory (BDI) to evaluate depression level. The BDI consisted of 21 items in the 4-point Likert-type rated between "0" and "3." The total score ranged between 0 and 63. The Turkish version of the BDI has been tested and validated in the Turkish population[23,24]. A score of ≥17 was chosen as the cut-off for clinical depression. In the present study, participants were asked to mark the appropriate options for the last two weeks in accordance to the form of application and evaluation. Those with a score of 17 or less were classified as "No depression," and those with a score of 18 or above were classified as "Have depression." Cronbach's alpha for the Beck Depression Inventory was calculated as 0.864. Accordingly, the internal consistency of the scale items is high.

Statistical analysis

Statistical analyses and calculations were made using the IBM Statistical Package for Social Sciences (SPSS) for Windows, version 21.0 (IBM Corp., Armonk, NY, USA). Data was then coded for subsequent statistical analysis. Chi-square tests were used to compare depression level according to sociodemographic characteristics. Logistic regression analysis was applied to investigate the effect of depression levels on gynecological symptoms.

Results

The median age of respondents was 35.0 (min-max: 18.0 - 49.0) years. Over 80% of respondents (n=249, 82.7%) indicated that they were unemployed, and more than half of the respondents (n=154, 51.2%) stated that they had a primary school level education. It was determined that 86.4% (n=260) of the respondents were non-smokers, and approximately 20% (n=52, 17.3%) of the respondents indicated that they had a chronic disease. In addition, 17.6% (n=53) stated that they consistently used some form of medication.

Prevalence of depression and gynecological symptoms

The overall prevalence of depression in this sample of reproductive-age women was 33.9%. Less than

Table 1: Gynecological Symptoms

Gynecological Symptoms	Nondepression n (%)	Depression n (%)	OR	[95% CI]	*p*
Abnormal vaginal discharge	80 (40.2)	68 (66.7)	2.975	[1.805 - 4.904]	***<0.001***
Itching	52 (26.1)	37 (36.3)	1.609	[0.964 - 2.687]	*0.068*
Burning	38 (19.1)	28 (27.5)	1.603	[0.915 - 2.808]	*0.097*
Malodor	44 (22.1)	42 (41.2)	2.466	[1.470 - 4.136]	***0.001***
Pelvic pain	68 (34.2)	48 (47.1)	1.712	[1.052 - 2.786]	***0.030***
Dyspareunia	53 (26.6)	45 (44.1)	2.175	[1.317 - 3.591]	***0.002***
Dysuria	31 (15.6)	24 (23.5)	1.667	[0.918 - 3.028]	*0.091*
Menstrual irregularity	75 (37.7)	51 (50.0)	1.653	[1.020 - 2.679]	***0.040***
Dysmenorrhea	109 (54.8)	57 (55.9)	1.046	[0.647 - 1.691]	*0.855*
PMS	132 (66.3)	67 (65.7)	0.972	[0.587 - 1.608]	*0.911*

Table 2: Prevalence of depression at baseline (per 100) by sociodemographic characteristics

	Nondepression n (%)	Depression n (%)	Test Statistics	*p*
Age group			2.258	*0.323*
18-25 years	31 (58.5)	22 (41.5)		
26-35 years	76 (70.4)	32 (29.6)		
36 and above years	92 (65.7)	48 (34.3)		
Education Status			8.272	***0.041***
Primary School	91 (59.1)	63 (40.9)[1,2,3]		
Secondary School	45 (69.2)	20 (30.8)[1]		
High School	34 (73.9)	12 (26.1)[2]		
University	29 (80.6)	7 (19.4)[3]		
Employment			0.467	*0.494*
Yes	162 (65.1)	87 (34.9)		
No	37 (71.2)	15 (28.8)		
Income			0.694	*0.707*
Income less than expense	48 (62.3)	29 (37.7)		
Income equivalent to expense	131 (67.2)	64 (32.8)		
Income more than expense	20 (69.0)	9 (31.0)		
Family Types			0.000	*1.000*
Nuclear	162 (66.7)	81 (33.3)		
Extended	37 (67.3)	18 (32.7)		
Body-mass index			4.286	*0.117*
Normal	56 (60.9)	36 (39.1)		
Overweight	81 (73.6)	29 (26.4)		
Obese	60 (63.2)	35 (36.8)		
Smoking Status			7.523	***0.006***
None	179 (68.8)	81 (31.2)		
Yes	17 (44.7)	21 (55.3)		
Chronic diseases			0.000	*1.000*
None	165 (66.3)	84 (33.7)		
Yes	34 (65.4)	18 (34.6)		
Medical drug use			0.000	*1.000*
None	164 (66.1)	84 (33.9)		
Yes	35 (66.0)	18 (34.0)		

half of the women (n=148, 49.2%) indicated that they had abnormal discharge, of which 28.6% (n=86) had experienced vaginal malodor, and 21.9% (n= 66) had experienced vaginal burning. It was identified that 18.3% (n=55) of the women had dysuria. Table 1 presents the gynecological symptoms of the respondents.

Comparison of depression by sociodemographic characteristics

Information on depression by sociodemographic characteristics is presented in Table 2. Depression rate was calculated as 41.5% (n=22), 29.6% (n=32), and 34.3% (n=48) in the 18-25, 26-35, and 35 and

Table 3: Gynecological symptoms data associated with presence of depression

Symptoms	n (%)
Abnormal discharge	148 (49.2)
Itching	89 (29.6)
Burning	66 (21.9)
Malodor	86 (28.6)
Pelvic pain	116 (38.5)
Dyspareunia	98 (32.6)
Dysuria	55 (18.3)
Menstrual irregularity	126 (41.9)
Dysmenorrhea	166 (55.9)
PMS	199 (66.1)

above age groups, respectively. The rates of depression in all age groups were similar (p >0.05). Depression was significantly higher in women who were primary school graduates compared to women with other education levels (p=0.041). It was also significantly higher in smokers compared to non-smokers (p=0.006), but it did not vary significantly by employment, family income, family type, BMI, chronic disease, or medical drug use.

Associations between depression and gynecological symptoms

When evaluating the relationship between gynecological symptoms and depression experience of the participants, no statistically significant difference was found in terms of itching, burning, dysuria, dysmenorrhea, or PMS (p >0.05). On the other hand, the rate of abnormal vaginal discharge in participants with depression was 66.7% (n=68), whereas the rate of abnormal vaginal discharge in participants without depression was 40.2% (n=80).

Factors most strongly associated with depression included abnormal vaginal discharge (OR 2.97, 95%CI 1.80 - 4.90), malodor (OR 2.46 95%CI 1.47-4.13), pelvic pain (OR 1.71 95%CI 1.05-2.78), dyspareunia (OR 2.17 95%CI 1.31-3.59), and menstrual irregularity (OR 1.65 95%CI 1.02-2.67).

Discussion

This study investigated the relationship between depression and gynecological health outcomes in non-pregnant women of reproductive age. Though many studies have looked into depression in women of reproductive age[25,26,27], depression in non-pregnant women as it relates to gynecological health outcomes has been relatively less studied. Additionally, the few studies on this topic performed in Turkey have only indirectly evaluated the relationship between depression and gynecological health consequences[28,29,30]. However, the present study revealed significant results in terms of depression and gynecological symptoms in many aspects of the population studied. For instance, in this study, the overall prevalence of depression was 33.9%. This finding corroborates the findings of Omani-Samani et al. (2018)[31] who discovered the rate of depression among infertile patients in Iran to be 30.5%, Indu et al. (2018)[32] in their study using the PHQ-9 in India, posited that 20.5% of women were found to prevalence of Mini International Neuropsychiatric Interview diagnosed depressive disorders.

The findings of this study were comparable to another study, which found the clinical association between sociodemographic variables and depression. Sociodemographic characteristics, such as education level and smoking status, have also been associated with depression in women in the present study. Goodwin et al. (2017)[33] found that American women who had depression during pregnancy were 2 times more likely to smoke than those who did not. In the same study, the prevalence of smoking was inversely related to the level of formal education among pregnant women, both with and without a history of depression. Among the 892,394 participants in the Behavioral Risk Factor Surveillance System database from 2016 to 2017, e-cigarette users were more likely to report a history of clinical depression diagnosis than participants who had never used e-cigarettes. In addition, increased frequency of e-cigarette use was associated with a progressively higher probability of reporting depression[34]. In a population-based study conducted in Brazil, an inverse relationship was observed between prenatal depressive symptoms and mothers' education. Women with 0-4 years of formal education were approximately 5.5 times more likely to have positive depression at prenatal screening than those with 12 years or longer[35].The present findings reported that the sociodemographic characteristics of the participants were significantly related to gynecological symptoms. However, the findings of this study still hold, as many studies have confirmed the relationship between depression and gynecological health among women of reproductive age.

In this study, consistent with the available literature[36,37] the rate of abnormal vaginal discharge

in participants with and without depression was 66.7% and 40.2%, respectively. In addition, abnormal vaginal discharge rates in women with depression were significantly higher than in women without depression. The rate of abnormal vaginal discharge in the present study was higher than in some of the previous studies[38,39], and this may be due to the simple "Yes" and "None" basis of the questions used. A positive correlation was observed between induced abortion, spontaneous abortion, and infertility and psychiatric disorders in 57,770 women followed up in gynecological practices in Germany[40]. In a similar study, it was found that acute vaginitis, candidiasis, urinary tract infection, itching and irregular menstruation were associated with the diagnosis of depression in women. The study also argued that many diagnoses in the field of gynecology may be associated with an increased risk of depression, which can seriously affect patients' lives[41]. According to Soyannwo *et al*. similarly found a relationship between gynecological problems and anxiety, and between a history of miscarriage and depression. As previous studies have reported, this present study also found that vaginal malodor, pelvic pain, dyspareunia, and menstrual irregularity were more common in participants with depression[3,40,41]..

Ethical considerations

This study was approved by the Istanbul Medipol University Non-Interventional Clinical Research Ethics Committee (Decision date: 30.03.2015, Decision No: 108400987-182). Written consent was obtained from all participants after researchers explained the purpose, significance, and protocol of the study.

Conclusion

The present study demonstrated that there is a difference between women with and without depression in terms of gynecological health outcomes. It has also demonstrated that depression is quite prevalent in non-pregnant women of reproductive age. In light of the findings of this study, it can be argued that mental health services should be included in reproductive health services, and it may be suggested that the presence of depression should be routinely investigated during the treatment of women who apply to gynecological clinics. In this way, it may be important to take into account the diagnosis of depression for the process of gynecological diagnosis and success of treatment for patients applying to gynecological clinics. In addition, there is a need to encourage public health interventions to target women who have gynecological conditions, especially focusing on the reproductive-age group, excluding specific periods (such as pregnancy, childbirth, and postpartum), to effectively reduce the burden of mental health problems. If mental health midwives and nurses work in gynecological clinics, they will have a key role in detecting the presence of depression and determining its possible effects. Further understanding of how the relationship between depression and gynecological health outcomes can determine the prevalence of depression, especially in non-pregnant women of reproductive age, is necessary to reduce and prevent possible direct and indirect negative effects of depression. Taking into account the current and past records of psychiatric disorders documented during the treatment of women who apply to gynecological clinics can help evaluations using short screening scales to refer women for early diagnosis and treatment. Based on the findings of this study, and in light of these clinical applications, it can be argued that routine investigation of the presence of depression can improve gynecological health outcomes. However, further research, such as identifying the diversity of mental health nursing and midwifery skills needed to provide personalized care, is necessary to improve this approach.

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Conflicts of interest

The authors declared that no conflict of interest.

Contribution of authors

FK collected and analyzed data and prepared the manuscript.

FO conceived and designed the study, supervised the project conception and design, co-analysed the study data. Co-prepared the manuscript.

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