Original Article

The psychological health of women with infertility: Hopelessness, anxiety and depression levels

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Abstract

Objectives: This study was performed to determine the level of hopelessness, anxiety and depression in women who applied for infertility treatment.

Methods: The study was conducted with 70 female patients who applied to the "IVF Unit" of a university hospital in Ankara, Turkey between October and November 2019, had agreed to participate in the study and were diagnosed with infertility. The data of the study were collected using the face to face interview technique with the Beck Hopelessness Inventory (BHI), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI) and Socio-demographic Information Forms. The ethical permission of the study was taken from the clinical research unit of the university where the research was conducted. Frequency and percentages in the evaluation of descriptive data; Chi-Square and Spearman Correlation Test was used for relationships and comparisons.

Results: Of the participants, 44.4% completed high school and 21.4% had an undergraduate degree. Of them, 60% were unemployed and 57.2% are middle-income earners. Of them, 41.4% were 33 and older; 55.7% stated that they had no children due to infertility. The average year of marriage was 7.4, average years of unprotected intercourse was 6.1, and BHI, BAI and BDI score averages were 7, 35 and 17 respectively. It was determined that there was a significant relationship between the status of unemployment of the women participating in the study and BHI, BAI and BDI scores, and between the years of unprotected intercourse and the BAI scores. It was observed that there was a negative correlation between women's education levels and the BAI and BDI scores, whereas there was a positive relationship between unemployed and BHI, BAI and BDI.

Conclusion: As the education levels of the women participating in the study decreased, BDI and BAI scores increased. It was observed that unemployed women had high scores on BHI, BAI and BDI, and anxiety scores increased as the years they had unprotected intercourse increased. According to these findings, among women receiving infertility treatment; those with a low education level, those who do not work and those with many years of having unprotected intercourse should be considered as a high risk group and screened for anxiety and depression. Nurses working in the field of infertility should improve their psychosocial counseling skills and consultancy skills should be used actively in the services provided in this field.

Keywords: Anxiety; depression; infertility; women.

Infertility is generally defined as the inability to become pregnant after a minimum of one year of regular and unprotected intercourse.[1] Although ranging from country to country, the World Health Organization (WHO) reported that 10 to 15% of the women of child-bearing age suffer from infertility.[2] According to the data of Turkey's Demographic and Health Survey published in 2019,[3] there has been a decrease in the fertility of women in the 15–24 age range in Turkey. It is suggested that the rate of women who do not have children toward the end of their reproductive years, which is used as

an indicator for the level of primary infertility, ranges from 4% to 8%. Infertility can be seen due to both organic reasons and physical anomalies, as well as to psychological factors which are associated with functionality issues where all test results of couples are negative.[4] Today, infertility, which has increased due to a variety of reasons, negatively affects couples' family lives, psychological health, and can cause crisis.[5] Studies analyzing women with infertility suggest that psychological problems such as depression and anxiety,[4,6–9] excessive stress,[5] emotional exhaustion[10,11] and hopelessness[12] are common.

There are many biopsychosocial and cultural factors that cause women with infertility to experience psychological issues. When a woman in her reproductive years unexpectedly learns that she cannot give birth to a child without a biological reason, she experiences loss and pain, and her partner's psychological and social life is also negatively affected. The inability to conceive brings about the loss of a sense of motherhood, which causes social stigmatization in societies particularly where the women's status is determined by motherhood and negatively affects women's psychological health.[5,13,14]

Advanced technology on reproduction in developed countries enabled the diagnosis and treatment of infertility but caused its psychological factors to be ignored by keeping them in the backround.[15,16] Even though there are a few studies investigating infertility and its psychological causes, it is suggested that more studies should be conducted on this subject[5,12,13,17] in Turkey, personal factors associated with psychological problems should be determined, and intervention studies on these problems should be improved.

This study was carried out to determine the levels of hopelessness, anxiety and depression as well as certain descriptive characteristics of women who have applied for infertility treatment, and to provide knowledge for interventions in this field.

Materials and Method

Study Type and Study Sample

This study was conducted using the cross-sectional descriptive design. It was carried out to determine the relationship of the levels of hopelessness, anxiety and depression in women, applying for infertility treatment, with certain descriptive characteristics. The study included 70 women who were admitted to the IVF unit of Hacettepe University hospital in Ankara, Turkey between October and November 2019, who were diagnosed with infertility, and who voluntarily accepted to participate. There was no sample selection and all 70 of the women were included in the study. All participants had just begun the IVF treatment or were in the first stages of the treatment. The IVF unit in which the study was conducted is affiliated with the Gynecology and Obstetrics Department of the university hospital.

Measurement Tools

The data of this descriptive study was collected using the Sociodemographic Information Form, the Beck Hopelessness Inventory (BHI), the Beck Anxiety Inventory (BAI), and the Beck Depression Inventory (BDI).

The sociodemographic information form was composed of questions prepared by the researchers to identify certain sociodemographic characteristics such as participants' age, education, employment and income status, duration of marriage, whether they used contraception, reason of childlessness, whether they had gotten pregnant before, for how many years they had wanted children, and the number of IVF treatments already performed.

The Beck Hopelessness Inventory (BHI): This inventory was developed by Beck et al.[18] to measure individuals' level of pessimism about the future. The Cronbach's alpha value was found to be 0.86 in the Turkish validity and reliability study,[19] and it was suggested that the validity and reliability was at an adequate level for Turkish society, and that this inventory can be used particularly in preventive mental health studies. The inventory is composed of 20 items. The participants are asked to give answers with "Yes" and "No" to the items that are suitable and unsuitable for them, respectively. The items 2, 4, 7, 9, 11, 12, 14, 16, 17, 18 and 20 are scored by giving one point to the answer "Yes"; and the items 1, 3, 5, 6, 8, 10, 13, 15, 19 are scored by giving one point to the answer "No". The total score ranges from 0 to 20. Higher scores indicate higher levels of hopelessness.

The Beck Anxiety Inventory (BAI) was also developed by Beck et al.[20] It is a Likert type self-evaluation inventory that includes 21 items. The Turkish adaptation study was carried out by Şahin,[21] and the Turkish validity and reliability study was carried out by Ulusoy et al.[22] The inventory was accepted and used as a clinical anxiety inventory that reliably measures anxiety in the monitoring of treatment. The patients were asked to evaluate their symptoms considering the phrase "within the last week including today". Each of the symptoms are evaluated as none, at mild level, at moderate level, and at severe level. The total score ranges from 0 to 63. Points between 0 and 7 indicate a minimal level of anxiety, points between 8 and 15 indicate a mild level of anxiety, points between 16 and 25 indicate a moderate level of anxiety, and points between 26 and 63 indicate a severe level of anxiety.

The Beck Depression Inventory (BDI) is used to measure negative, emotional, cognitive, and motivational symptoms encountered in depression. It is a self-evaluation inventory composed of 21 items. The Turkish adaptation, validity and reliability studies of the BDI were carried out by Nesrin Şahin Hisli (1988).[23] Each of the inventory items determines the behavioral pattern peculiar to depression, and includes a four-option self-evaluation sentence. Each of these options corresponds to the points 0, 1, 2, 3 based on the severity of depression they describe. The highest point possible on this inventory is 63, and the accepted breakpoint to determine clinical depression is 17. Points above 17 are suggested to identify depression requiring therapy with an accuracy rate of over 90%. In the score distribution, which was developed by Ceyhun[24] and is commonly used, the scoring is as follows: 0-10 points, no depression; 11-17 points, mild levels of depression; 18-29 points, moderate levels of depression; 30-63 points, severe levels of depression.

Process

The researchers performed a pre-interview with the participants who applied for the IVF treatment and who met the inclusion criteria. They informed the participants about the study and administered the data collection tools to those who agreed to participate. The participants filled out the data collection tools in the interview room at the IVF unit of the hospital where the study was conducted. Questions that were not fully understood were explained by the researchers.

Statistical Assessment

The data were evaluated using the IBM SPSS 21 software program. Frequency and percentages were used for the descriptive data. In the statistical analysis carried out to determine whether there is a relationship between the hopelessness, anxiety, and depression scores and participants' descriptive characteristics, the non-parametric Spearman correlation analysis and Chi-square test were carried out since the data obtained from BHI, BAI, and BDI scores were not normally distributed. The level of type 1 error was calculated as 5% for the statistical significance.

Ethical Considerations

The ethical approval was obtained from Hacettepe University's Clinical Researches Ethics Committee (KA-19099), and written informed consent was obtained from the participants.

Limitations

The study included only a limited number of women that were chosen for the sample, and their partners were not included. Also, there were no comparisons of the levels of hopelessness, anxiety, and depression carried out with a control group who were similar to the sample group but were not infertile. Therefore, the study results cannot be generalized. Additionally, the data was collected only with self-report inventories, and no psychiatric sessions or mental state evaluation was carried out to make a diagnosis.

Results

Table 1 shows the distributions of participants' descriptive characteristics. Of the participants, 22.9% were in the 18–27 age group, 35.7% were in the 28-32 age group, 31.4% were in

Table 1. The distribution of participants' descriptive characteristics, BHI, BDI, and BAI Scores

Descriptive characteristics	Number	%
Age		
18–27	16	22.9
28–32	25	35.7
33–37	22	31.4
38–47	7	10.0
Education		
Primary school	14	20.0
Secondary school	12	17.2
High school	29	41.4
University	15	21.4
Employment status		
Employed	28	40.0
Unemployed	42	60.0
Income status		
Weak	11	15.7
Moderate	40	57.2
Good	19	27.1
The reason of childlessness		
Woman herself	39	55.7
Her partner	8	11.4
Both partners	11	15.7
Unknown	12	17.2
Previous pregnancy		
Yes	18	25.7
No	52	74.3
Number of IVF treatments		
0	3	4.3
1	21	30.0
2	29	41.4
3	17	24.3
Beck Hopelessness Scores		
9 and lower	51	72.9
10 and above	19	27.1
Beck Depression Scores		
No depression	18	25.7
Mild level depression	21	30.0
Moderate level depression	31	44.3
Beck Anxiety Scores		
Moderate level anxiety	14	20.0
Severe level anxiety	56	80.0

the 33–37 age group, and 10% were in the 38-47 age group. The majority of the participants completed high school (41.4%) and had an undergraduate degree (21.4%). Most of them did not have wage-earning employment (60%) and their economic state was at a moderate level according to their own views.

Of the participants, 55.7% reported that the reason of childlessness was due to their infertility and 15.7% reported that the reason of childlessness was unknown. Of them 74.3% reported that they had not gotten pregnant before. Of the participants, 30% reported that they had used IVF treatment once, 41.4%

Table 2. Participants' duration of Marriage and Unprotected Intercourse and the Distribution of Mean Inventory Scores

Descriptive characteristics	Mean	Standard deviation	Minimum-Maximum
Duration of marriage	7.4	3.7	1–19
Duration of unprotected intercourse	6.1	3.8	1–19
Beck Hopelessness Scores	7.0	5.2	0–19
Beck Anxiety Scores	35.41	11.1	21–68
Beck Depression Scores	17.65	10.0	2–44

Table 3. Comparison of BDI, BAI and BHI Scores of Participants, who applied to the IVF Treatment, Regarding Certain Variables

Descriptive characteristics	Number (%)	Depression Score Medians	Anxiety Score Medians	Hopelessness Score Medians
Education				
Primary school	14 (20.0)	20	37	7.5
Secondary school	12 (17.2)	20	37	9.0
High school	29 (41.4)	17	31	5.0
University	15 (21.4)	8	27	3.0
Statistical assessment (Pearson Chi-Square Test)		$X^2=4.9$ sd:2; p=0.07; p>0.05	$X^2=1.81$; sd:1 p=0.14; p>0.05 (Fisher Chi-square Test)	$X^2=1.81$ sd:1; p=0.14; p>0.05
Employment status				
Employed	28 (40.0)	12.5	27.5	3
Unemployed	42 (60.0)	17.0	34.5	7
Statistical assessment		$X^2=10.85$ sd:2; p=0.04 p<0.04 (Pearson Chi-Square Test))	$X^2=10.92$; sd:1 p=0.02; p<0.05 (Fisher Chi-square Test)	$X^2=1.04$ sd:1; p=0.23 p>0.05 (Fisher Chi-square Test)
Duration of unprotected intercourse				
1–5	37 (57.9)	16	34	8
5–10	25 (35.7)	16	30	5
Over 10	8 (11.4)	21	38.5	7
Statistical assessment (Pearson Chi-Square Test)		$X^2=2.10$ sd:4; p=0.71 p>0.05	$X^2=6.23$ sd:2; p=0.04, p<0.05	$X^2=2.87$ sd:2; p=0.23 p>0.05

Table 4. Certain Sociodemographic Variables and Spearman Correlation Test Results of BHI, BDI and BAI Scores

Variables	BHI (n=70)		BAI (n=70)		BDI (n=70)	
	r	p	r	p	r	p
Education	-0.21	0.07	-0.27	0.02*	-0.36	0.002*
Employment status	0.31	0.009*	0.23	0.04*	0.26	0.02*
Duration of marriage	-0.13	0.27	-0.13	0.79	-0.03	0.77
Duration of unprotected intercourse	-0.14	0.21	-0.04	-0.08	0.49	0.97
Previous pregnancy	0.11	036	0.13	0.27	0.19	0.10

BHI: Beck Hopelessness Inventory; BAI: Beck Anxiety Inventory; BDI: Beck Depression Inventory.

twice, 24.3% three times. Hopelessness scores of 72.9% were 9 points or lower; 30% had a mild level of depression, while 44.3% had a moderate level of depression according to their depression scores. It was determined that the number of participants who had severe levels of anxiety according to their anxiety scores was considerably higher (80%).

Table 2 shows the participants' duration of marriage, the duration of unprotected intercourse and the distribution of their mean BHI, BAI, BDI scores. The participants' mean duration of marriage was 7.4 years and the mean duration of unprotected intercourse was 6.1 years. The mean BHI, BAI, BDI scores were determined to be 7, 35 and 17, respectively.

Table 3 shows the BHI, BAI and BDI scores of women who had applied for IVF treatment according to certain variables. There was a statistically significant relationship between employment status, duration of unprotected intercourse and depression and anxiety scores (p<0.05). No statistically significant relationship was found between, the reason of childlessness, the number of IVF treatments and BDI, BAI and BHI scores (p>0.05).

Table 4 shows the results of the Spearman Correlation Test that was carried out to determine the relationship between certain sociodemographic variables and BHI, BAI and BDI scores. There was a negative relationship between education, anxiety, and depression levels. As the education level decreases, the depression and anxiety levels increases accordingly. There was a positive relationship between the employment status of participants receiving infertility treatment and their hopelessness, anxiety and depression scores. Participants who did not have wage-earning employment had higher hopelessness, anxiety and depression scores than those who had jobs.

Discussion

The results of this descriptive study were discussed based on the relevant literature. Approximately nearly half of the participants had mild to moderate levels of depression scores, and the rate of participants who experienced severe levels of anxiety was considerably high. In the relevant literature, some studies stated that women's anxiety and depression levels were similar to those of the control group;[11,25] however, some studies reported that regardless of the reason of infertility, the levels of anxiety and depression were higher due to both the treatment process and the negative outcomes of the treatment.[6–9] The current study also found similar results; however, it found that the anxiety scores were higher than the depression scores. Studies measuring the anxiety level in women with infertility found that the level of anxiety in these women was considerably high.[4,26] However, in another study carried out with women receiving infertility treatment,[27] in analyzing biological indicators such as cortisol and prolactin levels while waiting for the results, it was determined that the level of anxiety was very high; however, after learning of the treatment results, the level of anxiety decreased and was similar to that of the control group. It has been suggested that high levels of anxiety and

symptoms of depression in women while waiting for results can be associated with uncertainty and previous negative experiences of women who focused on the treatment results.[28] In the current study, the majority of the participants were in the initial stage of applying for the treatment or had just started to receive the treatment and were experiencing uncertainty about the future. Test results of severe anxiety level scores may be associated with this uncertainty. The high level of anxiety women experience during this process should be taken into account for future psychosocial intervention studies.

The reasons of anxiety and depression observed in the psychological health of women with infertility can both be associated with biological and psychological reasons as well as with cultural reasons. In Eastern societies, the family is perceived as more valuable than the individual, and a women giving birth to a child is considered as the requirement of being and maintaining a family.[29] For example, in Africa, giving birth to a child is a valuable status because of economic, cultural and social reasons, and childlessness causes serious problems between couples.[30] Similarly with most other societies, the child is perceived as an important part of a family, and women's desire to become a mother is also reinforced in Turkish society. This awareness can transform into a psychological and social pressure that obligates married women to give birth to a child and to be a mother. Childlessness is a reason for social stigmatization especially for women. Moreover, repeated and unsuccessful treatments can trigger symptoms of anxiety and depression. In a study carried out with women receiving IVF treatment to measure the effect of anxiety and depression on conception,[8] it was reported that high levels of anxiety negatively affected pregnancy outcomes. Hormonal problems that appear due to the side effects of the medication used in the treatment[30] or psychological problems caused by psychosocial factors[13] negatively affect the rate of pregnancies. Demyttenaere et al.[31] determined that symptoms of depression in women receiving infertility treatment is associated with low conception rates. Another study reported that there was a significant increase in the pregnancy rates after a decrease in the depression and anxiety levels.[17]

Upon realizing the effects of psychological problems of women struggling with infertility on the treatment process and pregnancy, it has been suggested that the number of studies investigating the effects of psychosocial interventions on infertile couples should be increased[32] and that the groups at risk should be determined by screening anxiety and depression levels before the treatment.[33] In the current study, considering the levels of depression and high levels of anxiety observed in the participants, it can be suggested that psychosocial interventions that will be analyzed with a holistic and multidisciplinary approach should be used as part of the infertility treatment.

This study determined that there was an inverse relationship between education level, anxiety and depression scores, and that as the education level decreased, depression and anxiety scores increased, accordingly. Similarly, in the study of Aliyeh

and Laya carried out with women with infertility,[34] women with a lower level of education had higher depression scores. A study reported that women with lower education levels were more affected by the stigmatization of being infertile and that they were more subject to psychological problems.[35] In another study, it was determined that women who had lower education levels and were not working had a lower quality of life and that their ability to cope with psychological problems was insufficient.[36] In Turkey, the rate of women in the 15–49 age group whose education level is high school or higher is 41%. Only 28% of these women who are in their child-bearing years are working in a wage-earning job.[3] Since women with a higher education level generally have a wage-earning job with which they can gain their economic freedom, it is suggested that their level of household welfare can also be higher, that they can benefit more from healthcare services, and that they can respond to social pressure more successfully. In the current study, one third of the women completed primary school and the majority of them did not work in a wage-earning job. It can be suggested that these women, who are housewives, are subjected to traditional expectations of having a child by the family and their social environment more than others, that they have more difficulty in affording the cost of infertility treatment because they did not have a job, and that they have less opportunity for coping with these problems; therefore, they have higher hopelessness, anxiety and depression scores.

This study found a positive significant relationship between women's duration of unprotected intercourse and their depression scores. It was found that as women's duration of unprotected intercourse increased so did their depression scores. In Turkey, a study investigating marital adjustment and psychological effects in infertile couples[37] reported that as the duration of unprotected intercourse and marriage increases, the depression scores increase accordingly. Increased number of years of unprotected intercourse, and unsuccessful results of multiple IVF treatments can cause hopelessness and depression levels to increase as well as cause psychological problems.[38] In Turkey, in a study carried out with women with infertility, it has been reported that childlessness causes women to be unhappy, to have fearful thoughts that nothing will change, to be embarrassed by their partners and families, and to be afraid of getting a divorce. The study further reported that the increased duration of unprotected intercourse increases hopelessness and causes feelings of loss.[12] Feelings about loss and grief caused by infertility are experienced because of invisible losses. Generally, the loss of dreams, genetic continuity, sense of motherhood, a successful pregnancy and childbirth experience, relationships and the experience of parenthood[39] can be considered as these invisible losses. Similarly, in a study carried out with women with infertility using a control group, it was stated that as the duration of unprotected intercourse increases, anxiety and depression scores that can lead to psychiatric symptoms increase significantly.[40] Considering the relevant literature and the results of the current study, the inability to conceive even though the duration of unprotected intercourse

and marriage increases, decrease in expectation about the future, loss of hope in being a mother, being more subject to social pressure, and economic exhaustion caused by treatments can be counted as factors causing feelings of loss and grief, and increased depression scores.

Conclusion

The study determined that those women who had lower education levels, who did not work and whose duration of unprotected intercourse was higher had more psychological problems. According to these results, it is recommended that women receiving infertility treatment who have a lower education level and whose duration of unprotected intercourse is higher should be evaluated as a risk group regarding the success of the IVF treatment and that they should be provided with mental support and counseling. Beside the healthcare professionals working in the field of infertility, nurses especially should improve their psychosocial counseling skills to increase the success of the treatment; counseling skills should also be actively used by integrating them into the routine healthcare services in this field. Additionally, the field of infertility seems to be interesting for psychiatric nurses who want to work in different fields.

Author's Comment: Higher depression and anxiety scores found in women with infertility is an interesting result; however, comparative studies with an increased number of sample groups are needed. Future studies with a control group investigating the psychological effect of infertility treatment with groups that are homogeneous in terms of sociodemographic characteristics such as duration of unprotected intercourse, education levels, and employment status are recommended.

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