Levels of anxiety sensitivity, somatosensory amplification and alexithymia in patients with unexplained infertility

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Abstract

Objective: In this study, it was aimed to focus on the psychological aspect of unexplained infertility by comparing the mental symptoms of infertility due to known causes and fertile patients. Patients and Methods: 60 unexplained infertility patiens, 50 infertile patients with a known cause and 56 fertile patients were included in the study. Socio-demographic data form, Toronto Alexithymia Scale (TAS-20), Somatosensory Amplification Scale (SAS) and Anxiety Sensitivity Index (ASI-3) were applied to the patients. Results: No significant differences in the levels of alexithymia, somatosensory amplification, and anxiety sensitivity were detected across the groups ($p>0.05$). When the correlation of clinical scale scores with each other was analyzed in the whole group of infertile patients regardless of the cause, anxiety sensitivity was found increased as difficulty identifying feelings increased. Conclusion: In our study, it has been found out that; regardless of the knowledge of the etiology of infertility, the levels of alexithymia, somatosensory amplification, and anxiety sensitivity of infertile cases did not differ from those of fertile women. However, it has been shown that as the difficulty in identifying emotions increases in infertile cases, anxiety sensitivity, which may cause psychological infertility, also increases.

LEVELS OF ANXIETY SENSITIVITY, SOMATOSENSORY AMPLIFICATION AND ALEXITHYMIA IN PATIENTS WITH UNEXPLAINED INFERTILITY

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Keywords: Alexithymia, anxiety sensitivity, infertility, mental illness, psychiatric disorder

What is already known about this topic?

Infertility cause anxiety, depression and high stress levels. These psychiatric problems may lead unexplained infertility also.

What does this article add?

This is the first study, which compare mental status of infertile patients according to aetiology.

INTRODUCTION

Infertility is defined as not establishing pregnancy in the absence of contraception despite regular sexual intercourse for one year. According to the data of the World Health Organization, 8-10% of couples have infertility problems and this rate is increasing gradually.[1] For most couples, infertility is a psychological trauma; even described by many couples as the most difficult life experience in their lives.[2] Besides the psychological challenges of infertility, the treatment process also affects couples psychologically, economically, and physically.[3] Additionally, the mental state of the couple acts not only on the process of coping with the treatment procedures but on the pregnancy process and the upcoming parenting process as well.[4,5] However, it is thought that there is a bidirectional relationship between infertility and psychological factors. Infertility and treatment processes affect mental health and mental health acts on infertility.[3] However, a literature review reveals that studies have been conducted mostly to investigate the effects of infertility on mental health.[6-8] Many studies have shown that the two most common psychiatric disorders in infertile patients are anxiety disorders and depression.[9,10] Depression and anxiety in such patients are attributed to subjective feelings of stress, future uncertainty, concerns about treatment processes and techniques, and economic difficulties.[9]

The concept of "psychogenic infertility" has a long history in the field of infertility.[11,12] The concern that mental stress could put a possible pregnancy at risk is discomforting not only for women endeavouring to get pregnant but also for their physicians. Although some studies are available supporting that mental disorders such as anxiety or depression cause infertility,[13,14]the number of population-based prospective studies investigating the effect of stress on live births is limited.[15] In 2014, a study showed that biomarker levels indicating high stress severity in fertile women are associated with a longer time to establish a pregnancy and an increased risk of infertility.[16] Stress suppresses gonadotropin-releasing hormone (GNRH) in the hypothalamic-pituitary axis and causes alterations in the secretion of gonadal steroids and suppression of luteinizing hormone (LH), leading to impaired reproductive functions.[17] Furthermore, it is suggested that stress may be involved in the pathophysiology of infertility by culminating in lifestyle changes and decisions that may lead to a reduction in fertility. On the other hand, controversial results were reported by other studies that investigated the relationship between mental stress and fertility.[18,19]

In this study; which was planned based on the hypothesis that medically unexplained infertility might be a stress-related somatic symptom, infertile patients were divided into groups according to whether aetiology was known or not, aiming to compare the levels of alexithymia, anxiety sensitivity, and exaggeration of body sensations of infertile individuals to those of fertile individuals.

PATIENTS AND METHODS

Patients

This cross-sectional case-control study included a total of 166 consecutive patients in the age range between 21 and 39 years, who were admitted to the gynaecology outpatient clinic of the Recep Tayyip Erdogan University's School of Medicine in the period from December 2018 to June 2019. Informed consent was obtained from the participants prior to the study. The study was conducted in compliance with the ethical guidelines including the World Medical Association (1975) Declaration of Helsinki 2008 and the legal requirements of the Ethics Committee of the Recep Tayyip Erdogan University (Approval no: 2018/187).

Sixty individuals; who met the following criteria; including not achieving pregnancy despite regular sexual intercourse for more than 12 months, exclusion of male infertility, the absence of an abortion history, the

presence of at least one ovary, the presence of at least one active fallopian tube confirmed through hysterosalpingography or laparoscopy, the absence of pelvic pathology, normal hormone levels on the third to fifth days of the ovulatory cycle, and the presence of adequate follicular reserves, were considered to have "unexplained infertility". Fifty patients; who had infertility and whose infertility could be explained by tubal, anovulatory, or male factors, were included in the group of patients with "infertility due to a known cause". Fifty-six outpatients; who had at least two healthy pregnancies, who gave birth in the last two years, and who used contraceptive methods, were included in the "control group". Patients with a chronic disease and patients with a history of previous or current psychiatric treatment were excluded from the study. Clinical psychiatric examinations were performed by the same psychiatrist; who worked at the Recep Tayyip Erdogan University's School of Medicine and who was blinded to the infertility status of the participants. Patients; who were diagnosed with a current psychiatric disorder as a result of the interview, were excluded from the study.

Data Collection Tools

Socio-demographic data form: The socio-demographic data form was developed by the investigators to collect participant information about age, educational level, employment status, social support, infertility history, and clinical condition. In the infertile group, patients were asked to score the support they thought they had received from their spouses and families during the treatment process. Such questions were not included in the data form in the fertile patient group.

Toronto Alexithymia Scale (TAS-20): TAS-20 is a Likert-type scale; comprising 20 items to evaluate alexithymia; which is defined as the inability of the individual to identify his/her feelings or affect. Each item is scored on a scale from 1 to 5. The adaptation of the scale to the Turkish language was performed by Dereboy.[20] TAS-20 was revised by Motan and Gençöz in 2007. Through a factor analysis in that study, the three following factors were identified; including "difficulty identifying and describing feelings (TAS-A)", "difficulty communicating feelings (TAS-B), and "externally-oriented thinking (TAS-C). The sum of the points obtained from those three factors is a measure of general alexithymia (TAS-T). High scores obtained from the scale indicate high alexithymic features.[21]

Anxiety Sensitivity Index-3 (ASI-3): ASI-3 comprises 16 items scored on a five-point Likert scale. The validity and reliability of ASI-3 in the Turkish language was shown by Mantar et al..[22] It has been suggested that anxiety sensitivity predisposes the individual to develop various anxiety disorders.[23]

Somatosensory Amplification Scale (SAS): It is a Likert-type scale that investigates the amplification of somatic sensations experienced by the individual. The total score is evaluated as the amplification score. The validity and reliability of ASI-3 in the Turkish language was shown by Güleç et al..[24]

Statistical Analysis

The normal distribution of continuous variables was evaluated by using visual (histograms and probability graphs) and analytical (Kolmogorov-Smirnov and Shapiro-Wilk tests) methods. Statistical differences across the groups for continuous variables were evaluated using one-way analysis of variance (ANOVA) and Kruskal-Wallis tests. Statistical differences across the groups for categorical variables were determined using Chi-square and Fisher's Exact tests. Spearman's correlation analysis was used for analyzing correlations between continuous variables that did not conform to a normal distribution. Statistical significance was considered at a p-value of <0.05. For the statistical analyses, the R-version 3.6.3 was used.

Results

The socio-demographic data of the groups are shown in Table 1. The mean age was 28.72 ± 3.63 years in the "infertility due to known causes" group; 30.13 ± 4.59 years in the "unexplained infertility" group, and 34.17 ± 4.65 years in the "fertile" group. The mean age of the fertile individuals was statistically significantly higher compared to the mean age of the infertile individuals. The length of marriage was longer in the fertile group compared to the infertile patient group ($p<0.01$).

The scale scores of the groups are presented in Table 2. No significant differences in the levels of alexithymia, somatosensory amplification, and anxiety sensitivity were detected across the groups ($p>0.05$).

When the correlation of clinical scale scores with each other was analyzed in the whole group of infertile patients regardless of the cause, anxiety sensitivity was found increased as difficulty identifying feelings increased (Table 3).

When the effect of spouse and family support on scale scores was examined in the infertile patient group, no statistically significant differences were found between the group of individuals; who were and who were not supported by the family and the spouse ($p>0.05$).

Discussion

In this study; which compared the levels of alexithymia, somatosensory amplification, and anxiety sensitivity of the patients with unexplained infertility to those of fertile patients and the patients with infertility due to a known cause, no statistically significant differences have been detected across the groups ($p>0.05$). However; evaluating the awareness of feelings, the level of ability to express feelings, anxiety sensitivity, and the perception of somatosensory sensations, this is an important study that sheds light on the mental health of infertile cases; who did not have any known psychiatric disorder or who did not need to receive any medical treatment. Additionally; this study contributes to the literature significantly because it is the first study that examined infertile patients in two groups as unexplained infertility and infertility of known causes, comparing them with fertile patients.

It is known that difficulty identifying and communicating feelings, anxiety, and somatosensory amplification are associated with somatic disorders.[25-27] Somatic disorders are described as diseases with no organic causes and medical explanation. A prevalence study in our country in 2009 found the prevalence of somatic disorders as 7.7% and reported that somatic disorders were more common in women, among patients suffering from chronic diseases, and in patients; whose mothers had a low level of education.[28] Somatization is a coping mechanism in traditional cultures. Considering the social structure in Turkey, somatization of distress appears to be commonplace for women feeling dependent on men and suffering from difficulty communicating feelings openly. Alexithymia was found at a rate of 45.9% in individuals with somatization disorders in a study conducted in our country in 2016.[29] Prior to our study, we conceptualized that unexplained infertility might be a form of somatization. Therefore, we hypothesized that the scores of the somatization-associated scales including the alexithymia, somatosensory amplification, and anxiety sensitization scales of such patients would be higher than those of participants in the control group and the "infertility due to a known cause" group. However, our study result may lead us away from the conclusion that unexplained infertility is a form of somatization. On the other hand, such a result is likely to have come out because of the inadequacy of the sample size.

Most people associate being a woman with the ability to conceive and have children. Studies have reported that infertile women suffer from anger, sadness, shame, self-blaming, and feeling incomplete.[30] The extent of their communicating and sharing such feelings is debatable. In the literature, difficulty identifying and communicating feelings and lacking imaginative capacity are defined as alexithymic characteristics.[31] The severity of alexithymia has been reported to be high in depression and anxiety disorders in many studies.[29,32] There are studies in the literature suggesting that a two-way relationship exists between depression and alexithymia.[33] Such alexithymic characteristics may cause individuals to develop psychiatric disorders including anxiety disorders and depression. Considering the social aspects of infertility; it is possible to foresee that alexithymic characteristics of infertile women will be at the forefront, resulting in not only difficulty communicating but recognizing feelings as well. We hypothesized in our study that alexithymic characteristics would be more severe in the infertile patient group compared to the control group but no such conclusion has been reached. The total scores of alexithymia were found similar and at moderate severity in all three groups. One of the reasons for the lack of differences across the groups may result from inadequacies of women in our country in identifying their feelings in general. Another reason may be the inadequacy of the sample size. In the literature; there are no studies, in which the levels of alexithymia of infertile women have

been measured. Therefore, the results of our study are important for contributing to the literature.

The decision to have a child and raising a child instigate considerable responsibility with the potential to induce anxiety. Moreover; such a decision will give rise to another concern, whether the woman will ever get pregnant. Expectations begin from the first month when people begin to monitor their menstrual cycles and even to schedule the days of sexual intercourse accordingly. Anxiety starts building up with every upcoming month when pregnancy cannot be established. Medically unexplained infertility can sometimes contribute to further rise in anxiety because known causes make the things easier to control; whereas uncertainty is perceived of as uncontrollable and threatening, building up stress.[34] Studies have shown that high levels of perceived uncertainty are associated with high levels of anxiety and depression and with the quality of life.[35]

Anxiety sensitivity is defined as an individual difference variable arising from the individual's conceptions that anxiety or fear experiences will lead to maladies, embarrassment, or further anxiety.[23] In our study, we found out that anxiety sensitivities of infertile patients were correlated with difficulty identifying and describing feelings, difficulty communicating feelings, and somatosensory amplification regardless of the cause of infertility ($p<0.05$). This can be considered stemming from their inability to identify feelings, in other words from their alexithymic characteristics, resulting in the somatization of anxiety. Studies show that anxiety and depression act on the outcomes of treatment for infertility.[36-37] Starting from such information, the ability to identify feelings can be worked through for improvement to reduce anxiety sensitivity and somatic complaints so that the levels of anxiety and depression can be reduced; which can make a difference in the treatment process of infertile patients. Infertile individuals may undergo psychiatric examinations before treatment to identify and treat individuals having difficulties in identifying and communicating feelings and receiving inadequate social support. Thus; the development of depression and anxiety disorders can be prevented, potentially increasing both spontaneous pregnancy rates and the success of infertility treatment indirectly. Therefore, we are of the opinion that routine psychiatric evaluation is important in patients presenting for infertility treatment even in the absence of findings in the pre-treatment medical history suggesting any mental disorders.

This study has some limitations. The cross-sectional study design does not allow for the formulation of opinions about the changes in findings to occur over time. Both undergoing treatment and the stage of treatment can induce changes in individuals, particularly in infertile patients. Regarding the study sample; the normal distribution of variables including age, educational status, employment status, and the length of marriage in the infertile patient group strengthens the results. However, the limited sample size makes it difficult to generalize the results. Because of the use of self-administered scales in the study, potential bias in responses of participants to the scale items should not be ignored.

In conclusions, it has been found out that; regardless of the knowledge of the etiology of infertility, the levels of alexithymia, somatosensory amplification, and anxiety sensitivity of infertile cases did not differ from those of fertile women. However, it has been shown that as the difficulty in identifying emotions increases in infertile cases, anxiety sensitivity, which may cause psychological infertility, also increases. These results suggest that more research is required to understand the role of psychological disorders in the etiology of unexplained infertility due to its complicated nature of human fertility.

Disclosure statement

The authors declare no conflicts of interest.

References

1. Recent advances in medically assisted conception. Report of a WHO Scientific Group. *World Health Organ Tech Rep Ser.*1992;820:1-111.

2. Klonoff-Cohen H, Chu E, Natarajan L, Sieber W. A prospective study of stress among women undergoing in vitro fertilization or gamete intrafallopian transfer. *Fertility and sterility.* 2001 Oct;76(4):675-687. doi: 10.1016/s0015-0282(01)02008-8.

3. Cwikel J, Gidron Y, Sheiner E. Psychological interactions with infertility among women. *Eur J Obstet Gynecol Reprod Biol.* 2004 Dec 1;117(2):126-131.

4. Repokari L, Punamäki R-L, Poikkeus P, et al. The impact of successful assisted reproduction treatment on female and male mental health during transition to parenthood: a prospective controlled study. *Hum Reprod.* 2005 Nov;20(11):3238-3247. doi: 10.1093/humrep/dei214.

5. Hammarberg K, Fisher J, Wynter KH. Psychological and social aspects of pregnancy, childbirth and early parenting after assisted conception: a systematic review. *Hum Reprod Update.* 2008;14(5):395-414. doi: 10.1093/humupd/dmn030.

6. El Kissi Y, Romdhane AB, Hidar S, et al. General psychopathology, anxiety, depression and self-esteem in couples undergoing infertility treatment: a comparative study between men and women. *Eur J Obstet Gynecol Reprod Biol.* 2013 Apr;167(2):185-189. doi: 10.1016/j.ejogrb.2012.12.014.

7. Chiaffarino F, Baldini MP, Scarduelli C, et al. Prevalence and incidence of depressive and anxious symptoms in couples undergoing assisted reproductive treatment in an Italian infertility department. *Eur J Obstet Gynecol Reprod Biol.* 2011 Oct;158(2):235-241. doi: 10.1016/j.ejogrb.2011.04.032.

8. Patel A, Sharma PSVN, Narayan P, Binu VS, Dinesh N, Pai PJ. Prevalence and predictors of infertility-specific stress in women diagnosed with primary infertility: A clinic-based study. *J Hum Reprod Sci.* 2016;9(1):28-34. doi: 10.4103/0974-1208.178630.

9. Sezgin H, Hocaoğlu Ç. Psychiatric Aspects of Infertility. *Current Approaches in Psychiatry.* 2014;6(2):165-184. doi:10.5455/cap.20131001091415.

10. King RB. Subfecundity and anxiety in a nationally representative sample. *Soc Sci Med.* 2003 Feb;56(4):739-751. doi: 10.1016/s0277-9536(02)00069-2.

11. Greil AL. Infertility and psychological distress: a critical review of the literature. *Soc Sci Med.* 1997 Dec;45(11):1679-704. doi: 10.1016/s0277-9536(97)00102-0.

12. Wischmann TH. Psychogenic infertility—myths and facts. *J Assist Reprod Genet.* 2003 Dec;20(12):485-494. doi: 10.1023/b:jarg.0000013648.74404.9d.

13. Greil AL, Slauson-Blevins K, McQuillan J. The experience of infertility: a review of recent literature. *Sociol Health Illn.*2010 Jan;32(1):140-162. doi: 10.1111/j.1467-9566.2009.01213.x.

14. Williams KE, Marsh WK, Rasgon NL. Mood disorders and fertility in women: a critical review of the literature and implications for future research. *Hum Reprod Update.* 2007;13(6):607-616. doi: 10.1093/humupd/dmm019.

15. Biringer E, Kessler U, Howard LM, Pasupathy D, Mykletun A. Anxiety, depression and probability of live birth in a cohort of women with self-reported infertility in the HUNT 2 Study and Medical Birth Registry of Norway. *J Psychosom Res.* 2018 Oct;113:1-7. doi: 10.1016/j.jpsychores.2018.07.001.

16. Lynch CD, Sundaram R, Maisog JM, Sweeney AM, Buck Louis GM. Preconception stress increases the risk of infertility: results from a couple-based prospective cohort study—the LIFE study. *Hum Reprod.* 2014 May;29(5):1067-1075. doi: 10.1093/humrep/deu032.

17. Li W, Newell-Price J, Jones GL, Ledger WL, Li TC. Relationship between psychological stress and recurrent miscarriage. *Reprod Biomed Online.* 2012 Aug;25(2):180-189. doi: 10.1016/j.rbmo.2012.03.012.

18. Lynch CD, Sundaram R, Buck Louis GM, Lum KJ, Pyper C. Are increased levels of self-reported psychosocial stress, anxiety, and depression associated with fecundity? *Fertil Steril.* 2012 Aug;98(2):453-458. doi: 10.1016/j.fertnstert.2012.05.018.

19. Homan G, Davies M, Norman R. The impact of lifestyle factors on reproductive performance in the

general population and those undergoing infertility treatment: a review. *Hum Reprod Update.*2007;13(3):209-23. doi: 10.1093/humupd/dml056.

20. Dereboy İ. Aleksitimi özbildirim ölçeklerinin psikometrik özellikleri üzerine bir çalışma. Thesis. Ankara: Hacettepe University Institute of Health Sciences, 1990.

21. Motan İ, Gençöz T. The relationship between the dimensions of alexithymia and the intensity of depression and anxiety. *Türk Psikiyatri Dergisi* . 2007;18(4):333-343.

22. Mantar A, Yemez B, Alkın T. Anxiety sensitivity and İts ımportance in psychiatric disorders. *Türk Psikiyatri Dergisi* . 2011;22(3):187-193.

23. Reiss S, Peterson RA, Gursky DM, McNally RJ. Anxiety sensitivity, anxiety frequency and the prediction of fearfulness. *Behav Res Ther* . 1986;24(1):1-8.

24. Güleç H, Sayar K, and Güleç M. The reliability and validity of the turkish form of the somatosensory amplification scale. *Düşünen Adam: Psikiyatri ve Nörolojik Bilimler Dergisi.* 2007;20(1):16-24.

25. Leweke F, Leichsenring F, Kruse J, Hermes S. Is alexithymia associated with specific mental disorders. *Psychopathology* . 2012;45(1):22-28. doi: 10.1159/000325170.

26. Bankier B, Aigner M, Bach M. Alexithymia in DSM-IV disorder: comparative evaluation of somatoform disorder, panic disorder, obsessive-compulsive disorder, and depression. *Psychosomatics.*2001;42(3):235-240. doi: 10.1176/appi.psy.42.3.235.

27. Subic-Wrana C, Bruder S, Thomas W, Lane RD, Köhle K. Emotional awareness deficits in inpatients of a psychosomatic ward: a comparison of two different measures of alexithymia. *Psychosom Med.*2005;67(3):483-489. doi: 10.1097/01.psy.0000160461.19239.13.

28. Özenli Y,Yoldaşcan E, Topal K, Özçürümez G. Prevalence and associated risk factors of somatization disorder among Turkish university students at an education faculty. *Anadolu Psikiyatri Dergisi.* 2009;10:131-136.

29. Yıldırım A, Hacıhasanoğlu Aşılar R, CAmcıoğlu TH, Sevinç E. Alexithymia in depressive, anxiety, somatoform, and psychotic disorders: a comparative study. *Journal of Psychiatric Nursing.*2016;7(2):75-81.

30. Frederiksen Y, Farver-Vestergaard I, Skovgård NG, Ingerslev HJ, Zachariae R. Efficacy of psychosocial interventions for psychological and pregnancy outcomes in infertile women and men: a systematic review and meta-analysis. *BMJ Open.* 2015 Jan 28;5(1):e006592. doi: 10.1136/bmjopen-2014-006592.

31. Sifneos PE. The prevalence of 'alexithymic'characteristics in psychosomatic patients. *Psychother Psychosom.* 1973;22(2):255-262. doi: 10.1159/000286529.

32. Honkalampi K, Hintikka J, Tanskanen A, Lehtonen J, Viinamäki H. Depression is strongly associated with alexithymia in the general population. *J Psychosom Res.* 2000 Jan;48(1):99-104. doi: 10.1016/s0022-3999(99)00083-5.

33. Lipsanen T, Saarijärvi S, Lauerma H. Exploring the relations between depression, somatization, dissociation and alexithymia–overlapping or independent constructs? *Psychopathology.* 2004;37(4):200-206. doi: 10.1159/000080132.

34. Geçgin F, Sahranç Ü. The relationships between intolerance of uncertainty and psychological well-being. *Sakarya University Journal of Education.* 2017;**7** (4):739-755. Doi: 10.19126/suje.383737.

35. Barahmand U, Haji A. The impact of intolerance of uncertainty, worry and irritability on quality of life in persons with epilepsy: Irritability as mediator. *Epilepsy Res.* 2014 Oct;108(8):1335-1344. doi: 10.1016/j.eplepsyres.2014.07.002.

36. Terzioglu F, Turk R, Yucel C, Dilbaz S, Cinar O, Karahalil B. The effect of anxiety and depression scores of couples who underwent assisted reproductive techniques on the pregnancy outcomes. *Afr Health Sci.* 2016 Jun;16(2):441-450. doi: 10.4314/ahs.v16i2.12.

37. Boivin J, Griffiths E, Venetis CA. Emotional distress in infertile women and failure of assisted reproductive technologies: meta-analysis of prospective psychosocial studies. *BMJ.* 2011 Feb 23;342:d223. doi: 10.1136/bmj.d223.

Table 1 Socio-demogrphic data of the participants.

	Unexplained infertility (n=30)	**Infertility due to a known cause (n=25)**	**Control group (n=28)**	**p values**
Age (mean ± SD)	30.1 ± 4.5 (a)	28.7 ± 3.6 (a)	34.1± 4.6 (b)	< 0.001*
Duration of marriage [n(%)]				
2 years	10 (33.3)	10 (40.0)	3 (10.7)	0.002*
3 years	3 (10.0)	8 (32.0)	1 (3.6)	
4 years	3 (10.0)	1 (4.0)	2 (7.1)	
5 years and more	14 (46.7) (a)	6 (24.0) (a)	22 (78.6) (b)	
Educational level [n(%)]				
High school	14 (46.7)	16 (64.0)	11 (39.3)	0.374
University	16 (53.3)	9 (36.0)	17 (60.7)	
Employment status [n(%)]				
Not working	17 (56.7)	15 (60.0)	9 (32.1)	0.078
Working	13 (43.3)	10 (40.0)	19 (67.9)	
Social security [n(%)]				
No	0 (0.0)	1 (4.0)	1 (3.6)	0.557
Yes	30 (100.0)	24 (96.0)	27 (96.4)	
Income (monthly) (TL) [median (IQR)]	3100 (a) (2500-4000)	3450 (a) (3000-6250)	5000 (b) (4375-7500)	0.003*
Living with family [n(%)]				
Husband	18 (60.0)(a)	23 (92.0)(b)	26 (92.9)(b)	0.002*
Large family	12 (40.0) (a)	2 (8.0) (b)	2 (7.1) (b)	
Previous treatment history [n(%)]				
No	16 (53.3)	19 (76.0)	28 (100.0)	< 0.001*
Yes	14 (46.7)	6 (24.0)	0 (0.0)	
Spousal support [n(%)]				
No/ partly yes	5 (16.7)	3 (12.0)	0	0.715
Yes	25 (83.3)	22 (88.0)	0	
Family support [n(%)]				

	Unexplained infertility (n=30)	**Infertility due to a known cause (n=25)**	**Control group (n=28)**	**p values**
No/partly yes	9 (30.0)	8 (32.0)	0	0.873
Yes	21 (70.0)	17 (68.0)	0	
Chronical disease [n(%)]				
No	27 (90.0)	22 (88.0)	26 (92.9)	0.833
Yes	3 (10.0)	3 (12.0)	2 (7.1)	
Abbreviations: SD: Standart Deviation IQR: Inter Quarter Range a-b: There is not any statistically significant difference between the groups with the same letter. *p<0.05 was accepted to be statistically significant. $^{\alpha}$ Control groupwas not involved in statistical analysis for previous treatment history.	**Abbreviations:** SD: Standart Deviation IQR: Inter Quarter Range a-b: There is not any statistically significant difference between the groups with the same letter. *p<0.05 was accepted to be statistically significant. $^{\alpha}$ Control groupwas not involved in statistical analysis for previous treatment history.	**Abbreviations:** SD: Standart Deviation IQR: Inter Quarter Range a-b: There is not any statistically significant difference between the groups with the same letter. *p<0.05 was accepted to be statistically significant. $^{\alpha}$ Control groupwas not involved in statistical analysis for previous treatment history.	**Abbreviations:** SD: Standart Deviation IQR: Inter Quarter Range a-b: There is not any statistically significant difference between the groups with the same letter. *p<0.05 was accepted to be statistically significant. $^{\alpha}$ Control groupwas not involved in statistical analysis for previous treatment history.	**Abbreviations:** SD: Standart Deviation IQR: Inter Quarter Range a-b: There is not any statistically significant difference between the groups with the same letter. *p<0.05 was accepted to be statistically significant. $^{\alpha}$ Control groupwas not involved in statistical analysis for previous treatment history.

Table 2 Clinical scale scores between groups

	Unexplained infertility (n=30)	**Infertility due to a known cause (n=25)**	**Control group (n=28)**	**Total (n=83)**	**p values**
ASI-3 [Median(IQR)]	16.0 (7.0-20.0)	12.0 (5.0-24.0)	13.0 (6.7-24.2)	13.0 (6.0-23.5)	0.929
TAS-A [Median(IQR)]	13.5 (11.2-16.0)	11.0 (9.0-15.0)	13.0 (10.7- 15.2)	13.0 (10.0-16.0)	0.424
TAS-B [Median(IQR)]	10.5 (9.0-13.0)	12.0 (9.0- 14.0)	10.0 (9.0-12.0)	11.0 (9.0-13.0)	0.635
TAS-C [Median(IQR)]	20.0 (18.2-23.0)	21.0 (18.0- 23.0)	22.0 (19.0- 24.0)	21.0 (18.0- 23.0)	0.466
TAS-TOTAL [Median(IQR)]	45.0 (41.2-52.0)	45.0 (37.0- 51.0)	45.0 (41.5- 49.0)	45.0 (40.5- 51.0)	0.938
SAS [Median(IQR)]	26.5 (21.2-30.7)	28.0 (20.0- 34.0)	26.0 (20.0- 31.7)	26.0 (20.5- 33.5)	0.819

Abbreviations: ASI: Anxiety Sensitivity Index-3, TAS: Toronto Alexithymia Scale , SAS : Somatosensory Amplification Scale , IQR: Inter Quarter Range	**Abbreviations:** ASI: Anxiety Sensitivity Index-3, TAS: Toronto Alexithymia Scale , SAS : Somatosensory Amplification Scale , IQR: Inter Quarter Range	**Abbreviations:** ASI: Anxiety Sensitivity Index-3, TAS: Toronto Alexithymia Scale , SAS : Somatosensory Amplification Scale , IQR: Inter Quarter Range	**Abbreviations:** ASI: Anxiety Sensitivity Index-3, TAS: Toronto Alexithymia Scale , SAS : Somatosensory Amplification Scale , IQR: Inter Quarter Range	**Abbreviations:** ASI: Anxiety Sensitivity Index-3, TAS: Toronto Alexithymia Scale , SAS : Somatosensory Amplification Scale , IQR: Inter Quarter Range	**Abbreviations:** ASI: Anxiety Sensitivity Index-3, TAS: Toronto Alexithymia Scale , SAS : Somatosensory Amplification Scale , IQR: Inter Quarter Range

Table 3 Correlation analysis of clinical scales in infertile cases

TAS-A
TAS-B
TAS-C
TAS-TOTAL
Abbreviations: ASI-3: Anxiety Sensitivity Index 3, TAS: Toronto Alexithymia Scale , SAS : Somatosensory Amplification

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