

Research Article

A comparative study of depression among infertile and fertile women

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ABSTRACT

Background: Infertility has been a major medical and social preoccupation since the dawn of human existence and women have always been the symbol of fertility. Infertility is a stressful life event and depressive symptoms are normal responses to the life crisis of the infertile women. Aim and objective of the study was to determine the severity of depression in infertile females as compared to control group and to correlate the duration of infertility to depression in infertile females.

Methods: The Present study was carried out on 70 patients in both groups. After randomization, assessment of Sociodemographic details was done with the help of semi-structured performa and severity of depression by beck depression rating scale. The proposed study was conducted in phased manner observing ethics of voluntary participation and informed consent of the participants were taken.

Results: Both the groups were comparable with respect to age, socioeconomic status, occupation, education, religion, family type and area. No significant differences found between both groups with respect to the sociodemographic profile (p-value >0.05). The mean age of infertile women was 28.72 year and fertile women 27.45 years. We found that maximum female was from a middle class in both groups, 48 (68.57%) in infertile and 50 (71.42%) in the fertile group.

Conclusions: Depression was more in infertile women. Depression severity was positively correlated with age of women and duration of infertility. Low socioeconomic status, low educated and rural background was a risk factor for severity of depression for infertile women.

Keywords: Infertile women, Fertile women, Duration of infertility, Depression

INTRODUCTION

Infertility has been defined by the World Health Organization (WHO) as the inability to conceive despite regular sexual intercourse (4-5 times per week), sustained for a period exceeding 12 months without the use of any contraceptive methods.^{1,2} The inability to conceive children is experienced as a stressful situation by individuals and couples all around the world.³ WHO has declared infertility as a social disease affecting, 80 million people from all parts of the world.⁴ Although the rates of infertility vary throughout the world (ranging

from less than 5% to over 30%), it is estimated that approximately one in ten couples have either primary or secondary infertility.⁵ Sadly, infertility affects more people in developing countries, primarily due to infectious diseases that damage the reproductive tract and where access to fertility services is not available or is limited.³

The impact of infertility can have deleterious social and psychological consequences on the individual, from overt ostracism or divorce to more subtle forms of social stigma leading to isolation and mental distress.³

For most couples, conceiving and raising children are expected outcomes of their sexual relationship, and this may be particularly so in Eastern societies. Social and parental pressures to perpetuate the family name can place a psychologic burden on the infertile couple.⁶ The physical, psychologic and financial challenges associated with assisted reproductive techniques may have further impacts on the couple.

Depression is a common health problem in infertile women. The lifetime prevalence of major depression among women is approximately 14% to 21%.⁶ The patient may experience a loss of close relationship with his/her partner, might lose prestige in society and develop a low self-esteem and may lose hope for the future. These feelings may lead to depression, anger, anxiety or feelings of guilt. Infertility and depression are both highly prevalent disorders that often co-occur in women of childbearing age according to Lukse et al.⁷

Whether depression may cause infertility, is caused by infertility, or the co-occurrence of these two phenomena is coincidental, is not clear. Some researchers have suggested that outcomes of infertility treatment might be enhanced by effectively treating co-occurring depression.^{5,8}

Depression may affect infertility treatment, follow-up and hope for the future; it may also influence the intensity and longevity of relationship of the affected couple.⁹ There are many studies in the literature which indicate that levels of depression and anxiety are high in infertile women.

This study aimed to determine the depression among infertile women compared to fertile women and to see its relation with duration of infertility and age of women.

Aims and objectives

- To determine the severity of depression in infertile females as compared to control group.
- To correlate the duration of infertility to depression in infertile females.

METHODS

This study was a hospital-based observational study conducted in the Department of Obstetrics and Gynecology, SP Medical College and associated Hospital, Bikaner, Rajasthan, India. The study comprised of females with primary infertility at the time of their visit with an infertility specialist and control group coming for routine Gynecological examination. The present study was carried out on 140 females, 70 females meeting the criteria for primary infertility in one group and 70 fertile females in another group. Thereafter suitable instruments were applied and statistical analysis was done.

Inclusion criteria

Women diagnosed with primary infertility consenting to participate in the study.

Exclusion criteria

- Unwillingness to participate in the study.
- Age >40 years.
- Diagnosed as having any other psychiatric disorder.
- Having secondary infertility.
- Inability to read and understand the questionnaire because of language difficulties.

Ethical consideration

Study was approved by research review board & ethical committee of the institution. An informed consent was obtained from the subject prior to participation in the study.

Instruments of this study

- *Consent form:* This form was formatted in Hindi language & was given to all participants of this study. The written consent was taken from each subject before screening procedure.
- *Socio-demographic Profile:* This was included name, age sex, husband's name, address, marital status, education, occupation, type of family and monthly income of the participant.
- *Clinical profile performa:* This was included the history of infertility, menstrual cycle, obstetric and sexual history.
- *Beck depression inventory (BDI):* is a 21-item test used to assess the probability of depression occurrence and to evaluate its severity both in specific clinical populations (psychiatric) and non-specific (general population)^{10, 11}. BDI is characterized by high validity, credibility, reliability, and test-retest reliability with regard to isolation of depression symptoms.^{12,13} The final interpretation (which depends on the score) facilitates unambiguous division between healthy individuals and those with diagnosed depression (10 points is the cut-off line) as well as division into four levels of depression severity: lack of depression (0-9 points), mild depression (10-15 points), moderate depression (16-23 points) and severe depression (24 or more points).^{11,12}

Statistical analysis

Statistical analysis was done with the help of software SPSS 22.0. Group comparison for socio-demographic variables and clinical variables was done with the help of appropriate application of independent t-test and chi-square test/Fisher's exact test.

RESULTS

Both the groups were comparable with respect to age, socioeconomic status, occupation, education, religion, family type and area. No significant differences found between both groups with respect to the sociodemographic profile (p-value >0.05). The mean age of infertile women was 28.72 year and fertile women

27.45 years. We found that maximum female was from a middle class in both groups, 48 (68.57%) in infertile and 50 (71.42%) in the fertile group. By occupation 50 (71.42%) and 59 (84.28%) females were a housewife in infertile and fertile group respectively. Most of the females were completed their graduation in both groups. 26 (37.14%) and 29 (41.42%) females had high school education in infertile and fertile group respectively.

Table 1: Sociodemographic profile of both groups.

Variables	Infertile women (n=70)	Fertile women (n=70)	X ² (df)	p value
Age in Mean (SD)	28.72 (4.20)	27.45 (4.04)	(t test) 1.829	0.070
Socioeconomic Status				
1. High	7	7	0.184 (2)	0.912
2. Middle	48	50		
3. Low	15	13		
Occupation				
1. Housewife	50	59	3.356 (1)	0.066
2. Working	20	11		
Education				
1. Up to high school	26	29	0.511 (2)	0.774
2. Graduate	37	36		
3. Profession or honors	7	5		
Religion				
1. Hindu	53	59	1.607 (1)	0.204
2. Muslim	17	11		
Family				
1. Nuclear	52	48	0.56 (1)	0.454
2. Joint	18	22		
Area				
1. Urban	49	56	1.867 (1)	0.171
2. Rural	21	14		

Only 7 (10%) females in the infertile group and 5 (7.14%) in the fertile group had honors/professional degree. 53 (75.71%) and 59 (84.28%) female were Hindus in infertile and fertile group respectively.

By comparing family size 52 (74.28%) and 48 (68.57%) females belong to a nuclear family in infertile and fertile group respectively. In area-wise distribution 49 (70%) and 56 (80%) females were from urban areas in infertile and fertile group respectively (Table 1).

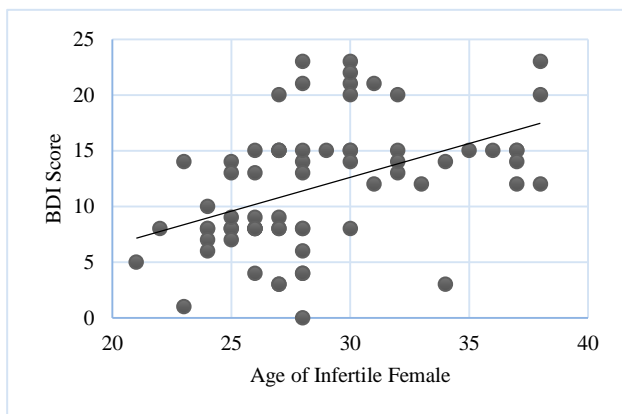


Figure 1: Correlation between back inventory depression score and age of the infertile female.

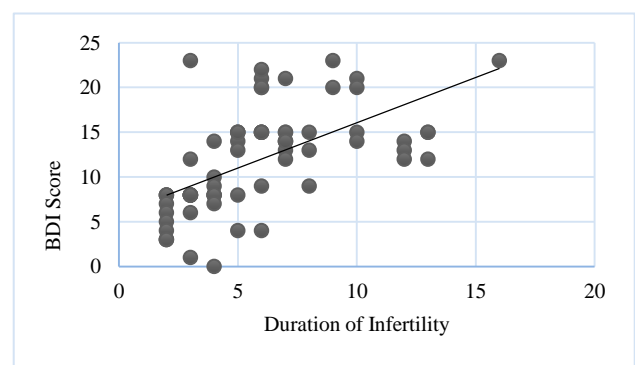


Figure 2: Correlation between back inventory depression score and duration of infertility in the infertile female.

By comparing active marriage duration in both groups we found mean duration was 5.84 years in infertile women and 5.4 years in fertile females and it was statistically not significant (p -value >0.05). Most of the women had two children (57.14%) followed by one child (35.71%) in the

fertile group. 49 (70.0%) infertile women had a normal husband semen analysis and 21 (30.0%) had an abnormal report. Whereas all the women in the fertile group has normal husband semen analysis.

Table 2: Clinical profile in both groups.

Variables	Infertile women (n=70)	Fertile women (n=70)	X ² (df)	p value
Active Marital Life(years) Mean (SD)	5.843 (3.304)	5.400 (3.333)	(t test) 0.789	0.431
Parity				
1. One	0	25		
2. Two	0	40		
3. Three	0	4	140.00 (4)	0.000
4. Four or more	0	1		
5. Nil	70	0		
Semen analysis of husband				
1. Normal	49	70	24.706 (1)	0.000
2. Abnormal	21	0		
Menstrual cycle				
1. Delayed	6	1		
2. Irregular	4	5	3.812 (2)	0.149
3. Regular	60	64		
Medical history (Last one year)				
3. On ATT	6	2		
4. Other	4	4	2.129 (2)	0.344
5. N/S	60	64		
Routine investigation				
1. NAD	68	69		
2. TLC Raised	0	1	3.007 (1)	0.222
3. TSH Raised	2	0		
Psychiatry history				
1. Yes	2	0	2.029 (1)	0.154
2. No	68	70		

Table 3: Mean score of depression rating scale.

	Infertile Women (No = 70) Mean (Std. Deviation)	Fertile Women (No = 70) Mean (Std. Deviation)	t test	p value
Beck's Depression Inventory	11.84 (5.692)	4.06 (3.627)	9.652	0.000

Table 4: Severity of depression in both group.

	Infertile Women (No = 70) (%)	Fertile Women (No = 70) (%)	X ² (df)	p value
No Depression	30 (42.9)	62 (88.6)	34.049	0.000
Mild	29 (41.4)	8 (11.4)		
Moderate	11 (15.7)	0 (0.0)		

History of the regular menstrual cycle was seen in 60 (85.71%) females of the infertile group while 64 (91.42%) fertile females had a normal menstrual cycle. History of past medical illness was insignificant in 60 (85.71%) females of the infertile group and 64 (91.42%) female of the fertile group. 6 (8.57%) infertile and 2 (2.85%) fertile females were on anti-tuberculosis

treatment (ATT). 4 (5.71%) females in both groups had a history of thyroxine and metformin intake in last one-year duration.

Routine investigation reports were normal in 68 (97.14%) and 69 (98.57%) females in infertile and fertile females respectively. By evaluating past psychiatry history in

both groups, 68 (97.14%) infertile women had negative history while no any females in the fertile group had a history of psychiatric illness (Table 2). In present study, we found the high score on beck depression rating scale

among infertile females (11.84) as compared to fertile females (4.06) and it was statistically significant (p-value=0.00). 30 (42.9%) infertile females and 62 (88.6%) fertile females had no depression.

Table 5: Correlation of depression with duration of infertility and age of women.

Correlations			
		Active Marital Life(years)	Age (years)
BDI Score	Pearson Correlation	0.588**	0.449**
	Sig. (2-tailed)	0.000	0.061
	N	70	70

** . Correlation is significant at the 0.01 level (2-tailed).

Table 6: Regression analysis to see the effect of a sociodemographic profile on depression.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.756	3.236		0.543	0.588
1 Socioeconomic Status	2.787	1.041	0.245	2.676	0.008
Religion	0.574	1.140	0.037	0.503	0.616
Education	-2.480	0.837	-0.251	-2.964	0.004
Residence	3.082	1.142	0.218	2.699	0.008

a. Dependent Variable: BDI Score

29 (41.4%) infertile females and 8 (11.4%) fertile females had a mild depression. Only 11 (15.7%) infertile females were affected by moderate depression. After taking into account the cut-off points (BDI=10) in the group of infertile women depression was diagnosed in 57.1 % as compared with 11.4% fertile female group. It was found statistically significant (p-value=0.00) (Table 3 and 4).

We found significant positive correlation with score depression rating scale and duration of infertility (Active marital life) (r=0.588, p vale=0.00) and with age (r=0.449, p vale=0.00) among infertile females group. It means that with increasing duration of infertility and age of the female, the severity of depression was also increased (Table 5).

Figure 1 Showing correlation between beck inventory depression score and age of the infertile female. And Figure 2 Showing correlation between beck inventory depression score and duration of infertility in the infertile female. To see the effect of the sociodemographic variable we analyzed regression test. The result showed that socioeconomic status, education, and residence had a significant effect on depression severity. It was found that there was more severe depression in low socioeconomic status (β=0.245, p=0.008), low educated females (Up to high school) (β=-0.251, p=0.004) and those belong to rural background (β=0.218, p=0.008) as compared to high socioeconomic status, highly educated and belong to urban background (Table 6).

DISCUSSION

The present study was carried out to determine the severity of depression in infertile and fertile women and its relation to duration of infertility. Both groups was comparable on the basis of the sociodemographic profile. A Higher level of depression severity was found in infertile females (in 57.1%) as compared to fertile female (in 11.4 %). Our study supported by Domar et al among infertile women depression occurred twice as frequently (36.7%) as in the control group (18%, p 5 0.025) (BDI).¹⁴

Mild/moderate depression was diagnosed in 28.3%, moderate/severe in 7.2%, and extremely severe in 1.2% of respondents with fertility disorders. Women who knew the infertility cause (female, male, combined) had a higher BDI score as compared with women with unknown etiology (idiopathic or undiagnosed infertility).¹⁵ Perhaps one of the most difficult emotional consequences of infertility is the loss of control over one’s life.

For many couples, their infertility becomes the focal point of daily discourse and tasks, often to the exclusion of other important aspects of life.¹⁶ Infertile women showed more social dysfunctions, a higher level of guilt, lower self-esteem with regard to attractiveness and depressive symptoms (24.9%) as compared with the control group (6.8%) and infertile men.¹⁵ Present result

showed significant positive correlation with duration of infertility and age of the female. In the research of analyzing infertility duration, the most statistically significant pathological results were obtained for the period of 2-3 years as compared with periods shorter than 1 year or longer than 6 years.¹⁴ It is thought that mood disorder risk factors in infertility are: female sex, infertility duration of 2-3 years, therapeutic failure, worse socio-economic conditions, and lack of support from the partner and episodes of depression in patient history.¹⁵⁻¹⁸

Chiba et al. reported that the duration of infertility plays an important role in the development of depression. In their study, they compared two groups suffering from infertility for <4 years and >4 years and reported depression more frequently in the latter group.¹⁹ However, a study by Guz H. showed that age and duration of infertility were inversely correlated with depression. According to them, the patients are able to accept the problem as they grow older and the longer infertility persists.²⁰

Present study showed that socioeconomic status education level and residence background showed a significant effect on depression severity. A study by Ramezanzadeh et al described the psychopathological profile of 370 infertile women.²¹ Their result showed negative correlations between depression and education – lower scores at a higher level of education, depression and lack of occupational activity as well as depression and anxiety with infertility duration (an increase of symptoms starting from 4-6 years, reaching an apogee at 7-9 years).

The results of Drosdzol A showed that the determination of depression and anxiety risk factors in infertility.¹⁵ They include: female sex, age over 30, lower level of education, lack of occupational activity, diagnosed male infertility and infertility disorders duration of 3-6 years, and it was also supporting present study. The fact that women expressed more depressive symptoms might be explained by the difference between partners in their approach to infertility; furthermore, infertile women are usually more psychologically affected than their partners because they feel more responsible for the etiology of infertility.^{17,22-24}

Secondly, the process of medical treatment for infertility is more intrusive for women.²⁴ The socio-demographic factors of age, gender, marital status, education, and income have consistently been identified as important factors in explaining the variability in the prevalence of depression. The influence of culture plays an enormous role in individual responses to infertility. In some cases, childless women have been excluded from some important social activities and ceremonies.²⁵ In India, early marriage is a psychosocial necessity and having a baby is a must for Indian women particularly male child to carry forward their family name. So it was very difficult for any Indian women not having any child as

she was suffered a lot of pain and stress from husband, family member, and society. And it was very difficult for a female who belong to the rural background, low educated and poor family background. As in rural areas and low families no one blame to male for not having a child rather than all blame goes to females.

CONCLUSION

- Depression was more in infertile women.
- Depression severity was positively correlated with age of women and duration of infertility.
- Low socioeconomic status, low educated and the rural background were a risk factor for severity of depression for infertile women, so they need more psychological support and proper counseling.

Limitation

- This is a cross-sectional study.
- This study is based on only one center so data may be differing according to socio-cultural background.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Kazandi M, Gunday O, Mermer TK, Erturk N, Ozkinay E. The status of depression and anxiety in infertile Turkish couples. *Iranian journal of reproductive medicine.* 2011;9:99-104.
2. Drosdzol A, Skrzypulec V. Evaluation of marital and sexual interactions of Polish infertile couples. *The journal of sexual medicine.* 2009;6:3335-46.
3. Cousineau TM, Domar AD. Psychological impact of infertility. *Best practice and research Clinical obstetrics and gynaecology.* 2007;21:293-308.
4. De Berardis D, Mazza M, Marini S, Del Nibletto L, Serroni N, Pino MC, et al. Psychopathology, emotional aspects and psychological counseling in infertility: a review. *La Clinica terapeutica.* 2014;165:163-9.
5. Al-Homaidan HT. Depression among Women with Primary Infertility attending an Infertility Clinic in Riyadh, Kingdom of Saudi Arabia: Rate, Severity, and Contributing Factors. *International journal of health sciences.* 2011;5:108-15.
6. Farzadi L, Ghasemzadeh A. Two main independent predictors of depression among infertile women: an Asian experience. *Taiwanese journal of obstetrics and gynecology.* 2008;47:163-7.
7. Lukse MP, Vacc NA. Grief, depression, and coping in women undergoing infertility treatment. *Obstetrics and gynecology.* 1999;93:245-51.
8. Wright AG, Hallquist MN, Swartz HA, Frank E, Cyranowski JM. Treating co-occurring depression and anxiety: modeling the dynamics of

- psychopathology and psychotherapy using the time-varying effect model. *Journal of consulting and clinical psychology.* 2014;82:839-53.
9. Amani-Vamarzani S, Dusti Y, Hassanzadeh R. Psychological disorders among women with primary infertility and fertile women. *International Research Journal of Applied and Basic Sciences.* 2013;4:720-23.
 10. Beck AT, Steer RA, Carbin MG. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review.* 1988;8:77-100.
 11. Sederer LI, Dickey B. Outcomes assessment in clinical practice. Baltimore: Williams and Wilkins; 1996.
 12. Beck AT, Steer RA, Ball R, Ciervo CA, Kabat M. Use of the Beck Anxiety and Depression Inventories for Primary Care with Medical Outpatients. *Assessment.* 1997;4:211-9.
 13. Richter P, Werner J, Heerlein A, Kraus A, Sauer H. On the validity of the Beck Depression Inventory. A review. *Psychopathology.* 1998;31:160-8.
 14. Domar AD, Broome A, Zuttermeister PC, Seibel M, Friedman R. The prevalence and predictability of depression in infertile women. *Fertility and sterility.* 1992;58:1158-63.
 15. Drosdzol A, Skrzypulec V. Depression and anxiety among Polish infertile couples an evaluative prevalence study. *Journal of psychosomatic obstetrics and gynaecology.* 2009;30:11-20.
 16. Cousineau TM, Domar AD. Psychological impact of infertility. *Best Practice and Research Clinical Obstetrics & Gynaecology.* 2007;21:293-308.
 17. Van Horn AS, Reed SA. Medical and psychological aspects of infertility and assisted reproductive technology for the primary care provider. *Military medicine.* 2001;166:1018-22.
 18. Khademi A, Alleyassin A, Aghahosseini M, Ramezanzadeh F, Abhari AA. Pretreatment Beck Depression Inventory score is an important predictor for post-treatment score in infertile patients: a before-after study. *BMC psychiatry.* 2005;5:25.
 19. Chiba H, Mori E, Morioka Y, Kashiwakura M, Nadaoka T, Saito H, et al. Stress of female infertility: relations to length of treatment. *Gynecologic and obstetric investigation.* 1997;43:171-7.
 20. Guz H, Ozkan A, Sarisoy G, Yanik F, Yanik A. Psychiatric symptoms in Turkish infertile women. *Journal of psychosomatic obstetrics and gynaecology.* 2003;24:267-71.
 21. Ramezanzadeh F, Aghssa MM, Abedinia N, Zayeri F, Khanafshar N, Shariat M, et al. A survey of relationship between anxiety, depression and duration of infertility. *BMC women's health.* 2004;4:9.
 22. Lunenfeld B, Van Steirteghem A. Infertility in the third millennium: implications for the individual, family and society: condensed meeting report from the Bertarelli Foundation's second global conference. *Human reproduction update.* 2004;10:317-26.
 23. Sherrod RA. Understanding the emotional aspects of infertility: implications for nursing practice. *Journal of psychosocial nursing and mental health services.* 2004;42:40-7.
 24. Smith S, Pfeifer SM, Collins JA. Diagnosis and management of female infertility. *Jama.* 2003;290:1767-70.
 25. Donkor ES, Sandall J. The impact of perceived stigma and mediating social factors on infertility-related stress among women seeking infertility treatment in Southern Ghana. *Social science & medicine* 1982. 2007;65:1683-94.

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