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Original Article

Psychiatry Section

Psychiatric Morbidity in Infertility Patients in a Tertiary Care Setup

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ABSTRACT

Context: Infertility is regarded as a trigger for psychological morbidity. Infertile couples often suffer from anxiety, depression and lack of self confidence.

Aims: To study the demographic factors associated with infertility in a tertiary care setup and to determine the level of anxiety and depression associated with it by using standardized scales. The study protocol also included studying the various coping strategies employed by these patient groups.

Settings and Design: Case control study.

Materials and Methods: A prestructured questionnaire based study conducted for a span of 6 months. The study population included the patients attending the infertility and the family planning outpatient department. We applied the Hospital Anxiety and Depression scale (HADS) and the Becks Depression Inventory (BDI). Brief COPE Inventory was applied to look for the various coping measures that are employed by the anxious and depressed patients.

Statistical Analysis: Data analysis was done using SPSS ver20.

Results: A total of 280 study subjects were included in the study; which included 140 women from the infertility clinic and 140 from the family planning OPD. A total of 56.4% (79/140) of the females were found to be suffering from depression and 68.9% (96/140) of the females were found to be suffering from anxiety and depression both. Seven risk factors were found to be significant for depression based on the Beck Depression Inventory (BDI) scale and 6 risk factors were found to be significant based on the Hospital Anxiety and Depression Scale (HADS). The most common coping method employed by depressed women was venting 72.2% (57/79) followed by behavioural disengagement 70.9% (56/79); whereas the most important coping method employed by the anxious and depressed women was behavioural disengagement 71.9% (69/96).

Conclusion: Anxiety and depression is common among patients suffering from infertility and measures should be taken to alleviate it.

Keywords: Beck depression inventory, Coping strategies, Hospital anxiety and depression scale

INTRODUCTION

For couples with women aged less than 35 years; the failure to conceive without contraception, after one year of trying to do so is defined as infertility [1]. Whereas for couples with women older than or equal to 35 years; failing to conceive after 6 months without contraception fall into the bracket of infertility. Worldwide, there is high prevalence of infertility. If the prevalence of infertility exceeds 15% in any nation, then it is considered as a health problem [2]. It is estimated that over 10% couples in the world experience the issue of infertility [3]. It is estimated that the prevalence of infertility is highest in Canada at 11.5-15.7% [4]; followed by 12.6% in India [5], 10% in US [1] and 1.72% among Chinese [6].

Infertility not only causes psychological burden on the couple; but also causes physical, emotional and financial burden [7-9]. It adversely affects the quality of life of the married couple. It may also lead to a higher probability for divorce [10]. In developing nations; the women are generally blamed or held responsible for the couple's infertility [11,12]. However, only one third of the infertility issues are caused because of women [1].

Few studies report the prevalence of anxiety, depression and lack of self confidence in childless couples [13-17]. The psychological stress faced by the married couple due to infertility equals that observed in those suffering from cancer, hypertension and cardiac rehabilitation [18]. The stress faced by the patients causes them to rely on several coping measures and also leads to dependence on support services [19].

Till date, there is very scarce data available in the Indian setting which comments on the spectrum of the psychiatric morbidity seen in the infertility patients. Also, there is scarce data to suggest the coping measures adopted by the patients from the Indian scenario [20]. Therefore, our study is an attempt to bring forth the Indian scenario. Our study aims to bring forth the risk factors associated with infertility and determines the level of anxiety and depression associated with it. In addition, we also determine the different coping strategies involved by women to deal with the psychological stress in their life.

MATERIALS AND METHODS

This study was a case control study conducted in a tertiary care setup in a medical college of Delhi. The study subjects consisted of patients attending the family planning and infertility clinic. The patients who were married and had children were considered as controls; which were usually the ones attending the family planning OPD. An effort was made to include all the patients attending these clinics during the proposed time span; however those patients who declined participation were excluded. The study was conducted for a period of 6 months in the months of February to July 2014.

A total of 280 females were included in the study. The patients with a past history of medical illness and patients coming for medical termination of pregnancy were excluded from the study. Patient with a previous history of mental illness were also excluded. Data collection was done by a predesigned, prestructured and pretested questionnaire. Prior approval was sought from the ethical committee of the institute and written consent was obtained from the study subjects. The participants were explained the aims and utility of the study and were ensured that all information about every participant would be confidential. For this study; Infertility was defined as primary; if the conception has never occurred in the subject, and secondary; if the conception failed to occur after a previous pregnancy irrespective of the pregnancy outcome; in participants engaged in regular sexual intercourse without contraception for one

year. The questionnaire included questions on socio demographic profile namely age, socioeconomic status, education status, employment status and residence. Obstetric information whether the infertility was primary or secondary, parity, history of abortions, treatment history and for how long patient has been trying to get pregnant was asked. The cost of the treatment of infertility whether borne by maternal in-laws, mother alone, or was equally borne by both was included in the questionnaire as well.

The Beck Depression Inventory [21,22] has 21 questions testing the presence of symptoms of hopelessness, irritability, lack of concentration and interest, guilt, fatigue, weight loss, and lack of interest in sex. It is meant for individuals above the age of 13 years. The standard cut-offs are 0-9, 10-18, 19-29 and 30-63 indicating minimal, mild, moderate and severe depression respectively [23].

The Hospital Anxiety and Depression Scale [24] is a standardized scale to study the prevalence of both anxiety and depression in study participants. This scale has 14 items; 7 of which belong to anxiety and 7 of them belong to depression. A score of 8 over a maximum of 21 is considered as a cut off mark for anxiety and depression.

Brief Cope Inventory assesses a wide spectrum of coping responses [25]. It contains 28 items. In total, 14 dimensions are covered by this scale; further every dimension has 2 items. The coping strategies are of two types; the problem focused strategies and the emotion focused strategies, Active planning, using instrumental support, planning are the problem focused measures and measures like self-blame, religion, positive reframing, humor, denial fall into the emotion focused ways to cope with stress [26].

To estimate depression as well as depression and anxiety; a sample size of 123 cases and 123 controls is required; assuming confidence level as 95% with level of significance 5% with effect size of 0.17. The t-test was applied to compare the cases and control groups. Chi-Square with Fischer exact-test was applied to compare the fertile and infertile females. SPSS ver 20 was used to analyse the data.

RESULTS

A total of 296 women were enrolled in the study. Ten women from the family planning OPD and 6 from the infertility clinic were excluded from the study. The exclusion criteria included women with age less than 18 years or greater than 45 years, those who were not available for the collection of data or who were suffering from co-morbidities including but not limited to psychiatric illnesses.

A total of 280 females were thus included in the study. These included; 140 females each from the family planning and the infertility clinic. The mean age of infertile females (cases) was 26.69±5.361. The Mean age of controls was 28.70 ±5.943. Most of the females attending the infertility clinic belonged to 26-35 years of age 45.6% (36/75). The socio demographic characteristics and gynecological and obstetric history of the cases and controls has been depicted in [Table/Fig-1].

Among the total number of infertile females 56.4% (79/140) females were found to be suffering from depression as calculated on the BDI scale. The number of females suffering from secondary infertility outnumbered as compared to females suffering from primary infertility which were 87.14% (122/140) and 12.86% (18/140) respectively. The average/mean BDI scores of the cases was found to be 14.23±7.996,thus most of the women were found to be mildly depressed based on this scale. The BDI score among the controls was found to be 7.29± 2.678. The [Table/Fig-2] shows the data comparing the depressed females on various socio demographic variables based on the BDI scale among the females suffering from infertility.

Among the infertile females depression was statistically significant among the females who had 2 or more than 2 abortions (p-0.001,

Infertility Clinic Patients (N=140)		
Indices	**Frequency (N=140)**	**Percentage**
Age of the Study Subjects		
18-25	39/140	27.9%
26-35	79/140	56.4%
36-45	22/140	15.7%
Residence		
Rural	62/140	44.3%
Urban	78/140	55.7%
Employment		
No	76/140	54.3%
Yes	64/140	45.7%
Education		
No	67/140	47.9%
Yes	73/140	52.1%
Abortion		
0		
1	42/140	30%
2	61/140	43.6%
3	37/140	26.4%
No of Child		
0	74/140	52.9%
1	45/140	32.1
2	19/140	13.6%
3	2/140	1.4%
Spouse supportive		
No	92/140	65.7%
Yes	48/140	34.3%
Relative Supportive		
No	82/140	58.6%
Yes	48/140	41.4%
Menses		
Menorrhagia	45/140	32.1
Regular	9/140	6.4%
Irregular	86/140	61.4%
Gynae infection		
No	67/140	47.9%
Yes	73/140	52.1%
Infertility Duration		
<5 years	60/140	42.9%
6-10 Years	50/140	35.7%
>10 Years	30/140	21.4%
Previous treatment for infertility		
No	56/140	40%
Yes	84/140	60%
Family Planning Clinic Patients (N=140)		
Indices	**Frequency**	**Percentage**
Age of the Study Subjects		
18-25	30/140	21.4%
26-35	58/140	41.4%
36-45	52/140	37.1%
Residence		
Rural	71/140	50.7%
Urban	69/140	49.3%
Employment		
No	53/140	37.9%
Yes	87/140	62.1%
Education		
No	54/140	38.6%
Yes	86/140	61.4%
Abortion		
0	115/140	82.1%
1	19/140	13.6%
2	4/140	2.9%
3	2/140	1.4%
Number of Children		
0	2/140	1.4%
1	41/140	29.3%
2	81/140	57.9%
3	16/140	11.4%
Spouse supportive		
No	10/140	7.1%
Yes	130/140	92.9%
Relative Supportive		
No	22/140	7.1%
Ye	118/140	84.286%
Menses		
Menorrhagia		
Regular	131/140	93.6%
Irregular	3/140	6.4%
Gynaecological infection		
No	3/140	2.1%
Yes	137/140	97.9%

[Table/Fig-1]: Socio demographic profile of the study population (N=140)

Infertility Clinic Patients (N=140)								
Indices	Frequency Of pts with depressed mood	Frequency of pts not suffering from depressed mood	Percentage of pts with Depressed Mood	Chi-Sq/ p-value	Odds Ratio (Crude)	p-value	ODDs adjusted	95% CI
Age of the Study Subjects 18-25 26-35 36-45	 30/79 36/79 13/79	 9/61 43/61 9/61	 38% 45.6% 16.5%	 p< 0.005 Chi-Sq- 10.515		 0.018		
Residence Rural Urban	 34/79 5/79	 28/61 33/61	 43% 57%	 p-0.735, Chi-Sq-0.114	 0.890			
Employment No Yes	 57/79 22/79	 19/61 42/61	 72.2% 27.8%	 p-0.0001, Ch Sq-23.321	0.175	0.014		
Education No Yes	 34/79 45/79	 33/61 28/61	 43% 57%	 p-0.194, Ch Sq-1.687				
Abortion 0 1 2 3	 0/79 5/79 46/79 28/79	 0/79 37/61 15/61 9/61	 0% 6.3% 58.2% 35.4%	 p-0.0001, Chi-Sq-50.729		0.006	3.067	1.369-6.873
Number of children 0 1 2 3	 57/79 20/79 1/79 1/79	 17/61 25/61 18/61 1/61	 72.2% 25.3% 1.3% 1.3%	 p-0.0001, Chi-Sq-35.663		p-0.0001	0.125	0.049-0.318
Spouse supportive No Yes	 58/79 21/79	 34/61 27/61	 73.4% 26.6%	 p-0.029, Chi-Sq-4.776	0.456			
Relative Supportive No Yes	 61/79 18/79	 21/61 40/61	 77.2% 22.8%	 p-0.0001, Chi-Sq-25.972	0.155			
Cost of treatment bourne by Maternal Inlaws Mother Husband and Wife	 *15/79* *38/79* *26/79*	 2/61 8/61 51/61	 19% 48.1% 32.9%	 p-0.0001, Chi-Sq-35.902		p-0.0001	0.074	0.023-0.239
Menses Menorrhagia Regular Irregular	 32/79 5/79 42/79	 13/61 4/61 44/61	 40.5% 6.3% 53.2%	 p-0.051, Chi-Sq-5.964				
Gynaecological infection No Yes	 29/79 50/79	 38/61 23/61	 36.7% 63.3%	 p-0.003, Chi-Sq-9.030	2.849			
Infertility Duration <5 years 6-10 Years >10 Years	 22/79 31/79 26/79	 38/61 19/61 4/61	 27.8% 39.2% 32.9%	 p-0.0001, Chi-Sq-21.318		 p-0.0001	 6.273	2.333-16.864
Previous treatment for infertility No Yes	 18/79 61/79	 38/61 23/61	 22.8% 77.2%	 p-0.0001, Chi-Sq-22.389	 5.599	 p-0.0001	 15.862	 3.821-65.843

[Table/Fig-2]: Socio demographic profile and the prevalence of depression of the infertile study subjects; after utilizing the Becks Depression Inventory (N= 140)

df=2,Chi-Sq-50.729). Not having even one child was found to be significant factor causing depression (p-0.0001, df=2, chi-sq-35.663), and was found to be the most important risk factor independently associated with depression. The other significant factors associated with causation of depression have been shown in the [Table/Fig-2]. The risk factors which came out to be significant on univariate analysis were increasing age, lack of employment, abortion, no. of children, support from spouse, relatives support, menses, gynaecological infections, duration of infertility and previous treatment of infertility. The females were more commonly depressed if the funds for the treatment of infertility were either funneled from mother or the mother's relative end rather than the combined cost shared by both (X^2-35.902,df=2,p-0.0001). Residence and education status were reported to be insignificant factors among the respondents. The independent risk factors causing depression in the females were found to be number of abortion, number of children, cost of treatment and the duration of infertility and previous treatment of infertility.

The most important method used for coping by the infertile females was venting 72.2% (57/79), followed by behavioural disengagement 70.9% (55/79). The method least commonly used was instrumental support 55/79 (69.6%) among the respondents. [Table/Fig-3] throws light on the various coping strategies adopted by the infertile females.

The HADS scale was used to measure the Anxiety and depression. The number of infertile females suffering from anxiety and depression both; based on the HADS scale were found to be 68.6% (96/140) with a mean HADS score of 12.16±5.347. These findings have been depicted in [Table/Fig-4]. The Mean HADS score for the fertile females was 7.19±1.904. The risk factors which came out to be significant on univariate analysis were increasing age of the study subjects, lack of employment, education, abortion, number of children, support from spouse, lack of support from relatives, menstrual disturbances, gynecological infection, duration of infertility and previous treatment for infertility. The risk of anxiety and depression was higher in women in whom the cost was borne by the maternal in-laws or the mother and was found to be statistically significant as well (X^2-33.74, Df-2, p-0.0001). The risk factors independently associated with anxiety and depression on binary logistic regression were lack of employment, duration of infertility, previous treatment for infertility and the cost of treatment, the adjusted odds for which have been shown in [Table/Fig-4]. The various coping strategies

adopted by the depressed infertile women have been shown in [Table/Fig-3]. With reference to the infertile women suffering from both anxiety and depression; the coping strategies adopted have been mentioned in the [Table/Fig-5].

The methods adopted by the infertile females to alleviate anxiety and depression were behavioural disengagement 71.9% (69/96), use of instrumental support 70.8% (68/96) and venting 70.8% (68/96) in that order. These findings have been depicted in [Table/Fig-5].

Indices	Percentage of depressed females	p-value
Self Distraction	46/79(58.2%)	0.0001
Active Coping	44/79(55.7%)	0.0001
Denial	41/79(51.9%)	0.104
Substance Use	16/79(20.3%)	0.006
Use emotional Support	42/79(53.2%)	0.0001
Use instrumental Support	55/79(69.6%)	0.761
Behavioural Disengagement	56/79(70.9%)	0.640
Venting	57/79(72.2%)	0.0001
Positive Reframing	43/79(54.4%)	0.126
Planning	38/79(48.1%)	0.024
Humor	29/79(36.7%)	0.126
Acceptance	48/79(60.8%)	0.431
Religion	43/79(54.4%)	0.0001
Self blame	34/79(43%)	0.004

[Table/Fig-3]: Distribution of Depressed Females according to the Brief Cope Inventory (N=79)

DISCUSSION

The purpose of the present study was to determine the prevalence and severity of depression using the BDI scale and the combined anxiety and depression using the HADS scale. The percentage of depression in our study was found to be 56.4%; which is in close association with the prevalence of depression seen in developing nations like Ghana 62% [27]; A study conducted on Chinese women has reported higher percentage of depression viz 67% [28]. This study reported depression levels higher compared to study done by Ramezanzadeh et al., who reported levels of depression in the infertile women to be 40.8% [29]. However, study done in Poland

Infertility Clinic Patients (n=140)								
Indices	Frequency Of Pts suffering from depression and Anxiety (N=96)	Frequency of pts not suffering from depression (N=44)	Percentage Of pts suffering from depression	Chi-Sq/ p-value	Odds Ratio (Crude)	p-value	ODDs adjusted	95% CI
Age of the Study Subjects 18-25 26-35 36-45	 34/96 45/96 17/96	 5/44 34/44 5/44	 35.4% 46.9% 17.7%	 p<0.003, Chi-Sq-11.980				
Residence Rural Urban	 43/96 53/96	 25/44 19/44	 55.7% 44.3%	 0.859				
Employment No Yes	 69/96 27/96	 7/44 37/44	 71.9% 28.1%	 p-0.0001, Chi-Sq-38.081	 0.074	 0.033	 0.300	 0.100-0.906
Education No Yes	 37/96 59/96	 30/44 14/44	 38.5% 61.5%	 p-0.001, Chi-Sq-10.622	 3.417			
Abortion 0 1 2 3	 0/96 10/96 55/96 31/96	 0/44 32/44 6/44 6/44	 0% 10.4% 57.2% 32.3%	 p-0.0001, Chi-Sq-56.263		 0.006	 2.821	 1.345-5.917
Number of Children 0 1 2 3	 60/96 23/96 11/96 2/96	 14/44 22/44 8/44 0/44	 62.5% 24.0% 11.5% 2.1%	 p-0.003, Chi-Sq-13.661				
Spouse supportive No Yes	 69/96 27/96	 23/44 21/44	 71.9% 28.1%	 p-0.023 Chi-Sq-5.146	 0.429			
Relative Supportive No Yes	 66/96 30/96	 16/44 28/44	 68.8% 31.2%	 p-0.0001, Chi-Sq-13.042	 0.260			
Cost of treatment bourne by Maternal Inlaws Mother Husband and Wife	 *15/96* *44/96* *37/96*	 2/44 2/44 40/44	 15.6% 45.8% 38.5%	 p-0.0001, Chi-Sq-33.747		 0.0001	 0.205	 0.089-0.474
Menses Menorrhagia Regular Irregular	 36/96 6/96 54/96	 9/44 3/44 32/44	 37.5% 6.2% 56.2%	 p-0.130, Chi-Sq-4.076				
Gynaecological infection No Yes	 34/96 62/96	 33/44 11/44	 35.4% 64.6%	 p-0.0001, Chi-Sq-18.944	 5.471			
Infertility Duration <5 years 6-10 Years >10 Years	 31/96 36/96 29/96	 29/44 14/44 1/44	 32.3% 37.5% 30.2%	 p-0.0001, Chi-Sq-19.217		 0.0001	 4.229	 1.927-9.283
Previous treatment for infertility No Yes	 20/96 76/96	 36/44 8/44	 20.8% 79.2%	 p-0.0001, Chi-Sq-46.755	 17.100	 0.007	 4.625	 1.515-14.114

[Table/Fig-4]: Socio demographic profile and the prevalence of anxiety and depression of the infertile study subjects; after utilizing the Hospital Anxiety and Depression Scale (N= 140)

Indices	Percentage	P-value
Self Distraction	58.3%(56/96)	0.0001
Active Coping	56.2%(54/96)	0.0001
Denial	51%(49/96)	0.104
Substance Use	19.8%(19/96)	0.008
Use emotional Support	52.1%(50/96)	0.0001
Use instrumental Support	70.8%(68/96)	0.751
Behavioural Disengagement	69/96(71.9%)	0.656
Venting	70.8%(68/96)	0.0001
Positive Reframing	53/96(55.2%)	0.147
Planning	47.9%(46/96)	0.025
Humor	33.3%(32/96)	0.656
Acceptance	59.4%(57/96)	0.632
Religion	53.1%(51/96)	0.001
Self blame	41.7%(40/96)	0.016

[Table/Fig-5]: Distribution of anxious and depressed females according to the Brief Cope Inventory (N=96)

found that the rates of depression were 35.44% and were lower as compared to our study [30].

The present study also depict that employed women, spousal support, support from relatives seemed to protect against the causation of depression. However, the presence of gynecological infections and prior treatment of infertility seemed to increase the existence of depression among the infertile women. Similar findings have been reported by Alhassan et al., as well [27]. Studies have shown that fertility of the females peaks at around the age of 26-35 years so depression is more common in this age group [31,32]. Education has a protective effect on depression and educated and employed infertile women are less prone to depression [Table/Fig-3]. According to one study the unemployed women were more prone to develop depression and anxiety compared to their working counterparts [23]. It was also found that the duration of infertility poses a detrimental effect on the women; as the increasing duration of infertility had an increasing association with depression [32,28,33,34]. With reference to educational status the results of our study are in close concordance with the studies done by Ramezanzadeh et al., and Domar et al., [29,35]. However, Study done in Nigeria reported a lower incidence of anxiety viz 37.5% on HADSA scale [36]. Also, study done in Poland reported 15.53% on Beck anxiety inventory which was less compared to our study [30]. In Iran the levels of anxiety were significantly higher as compared to our study and were found to be 86.8% using the cattle questionnaires for surveying anxiety and depression [29]. Primary infertility is not very common; the values from our study are less in comparison as compared to the data from other developing nations [29].

Similar studies using the Brief cope scale have been done in southern Ghana by Donkor S et al., in which the primary method of coping used by women was by keeping information about their infertility to themselves and also women tried to avoid situations that reminded them of infertility [34]. Our study found venting followed by behavioural disengagement as two important causes of coping mechanisms adopted by this set of women; thus bringing forth the India scenario. Study done by Joshi et al., found that problem solving approach, logical analysis and cognitive avoidance were lesser in infertile women as compared to the normal women [37].

CONCLUSION

The prevalence of depression and anxiety should not be underestimated in the women suffering from infertility. Apart from searching for the obstetrical causes of infertility; psychological morbidity should be considered as a serious concern affecting these women. Moreover, there are several risk factors which may increase the likelihood of psychological stress; like presence of two or more abortions, nulliparity, lack of support from spouse or relatives etc. These must be kept in kind by the clinicians, obstetricians and healthcare workers when evaluating a case of infertility.

Further it is recommended to screen prospective patients coming in for the treatment of infertility; especially if they are found to have presence of any of the above risk factors strongly associated with the prevalence of anxiety and/ or depression in these women. It would be useful if a quick and short screening instrument is developed for the benefit of the clinicians and healthcare workers to identify prospective patients in need of psychosocial assistance.

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