Original Research Article

Mental Health Status of Couples Suffering From Infertility at a Tertiary Care Hospital in Kolkata

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ABSTRACT

Background: Reproductive health is a priority global health area, with infertility being a critical component. Infertility leads to distress and depression. The mental health status may affect treatment and outcomes of infertility.
Objective: The study was conducted to determine the mental health status of the couples suffering from infertility, and to assess whether there was any association between the severity of anxiety, stress and depression, and the type and duration of infertility.
Methods: This was a hospital-based, cross-sectional study. 260 couples were interviewed over 3 months, satisfying the inclusion and exclusion criteria of the study. DAS-21 scale was used to assess the mental health status of these couples.
Results: Depression was absent in half of the women. Almost all men and women had anxiety, with half having moderate to severe anxiety. Half the women were moderately stressed. Depression was present in 3 out of 5 men. 60% men had moderate levels of stress. The relationship between severity of anxiety in females and males, and the type of infertility was found to be significant. Relationship was also established between severity of anxiety, stress and depression and the duration of infertility.
Conclusions: A large proportion of patients were found to have anxiety, stress and depression. Mental health status of all infertile couples should be screened as a part of infertility management. Counseling and initiation of early treatment would help improve their mental health status.

INTRODUCTION

Infertility is clinically defined as the absence of conception after 12 months of regular, unprotected intercourse. However, many couples conceive without treatment after more than 12 months. [1] The World Health Organization recommends 24 months of unprotected intercourse as the preferred definition. [2] This discrepancy in definitions occurs because in clinical practice treatment should be initiated as soon as possible, whereas, in epidemiological research it is important to exclude those who are not suffering from infertility.

Infertility can be primary infertility, in which no previous pregnancies have occurred, or secondary infertility, in which a prior pregnancy, although not necessarily a live birth, has occurred. [3] Conception is affected by the fertility potential of both the male and female partner. Male factor is the sole cause of infertility in 20% of infertile couples and may be a contributing factor in as many as 40% of cases, the female in 40% - 55% cases and both the partners are responsible in 10% cases. The remaining 10% is unexplained, in spite of thorough investigations. The relative subfertility of one partner may sometimes be counterbalanced by the high fertility of the other. [4]

A study by Mascarenhas et al [5] in 2010 identified 277 demographic and reproductive health surveys, including seven multi-country programs and two country-specific surveys that included questions on infertility revealed an estimated that nearly 50 million couples worldwide were infertile. One out of every four couples from developing countries was found to be affected by infertility, from a Demographic and Health Surveyconducted in collaboration with WHO in 2004. [6] The prevalence of ever experiencing infertility, according to the District Level Household and Facility Survey (DLHS)-4 is 14.1% in West Bengal. It is much higher than the prevalence in India (8.2%). [7]

A study that included 488 American women concluded that women suffering from infertility felt as anxious or depressed as those diagnosed with cancer, hypertension, or a heart attack. [8] It also leads to distress and depression, as well as discrimination and ostracism. [9] Depression, anxiety and stress associated with infertility may affect treatment and outcomes. [10] However, there is scant literature available about the mental health status among the husband and wife suffering from infertility in West Bengal. This study was intended to identify anxiety, depression and stress among couples suffering from infertility, so that assessment of mental health can be considered as a part of infertility management.

OBJECTIVES:
1. To find out the types, causes and duration of infertility among the couples attending infertility clinic of Calcutta National Medical College and Hospital, Kolkata.
2. To assess the mental health (anxiety, depression and stress) status of the couples.
3. To find out association, if any, between the presence of stress, anxiety and depression of the couples with the type of infertility and its duration.

MATERIALS AND METHODS
Study design:
A cross-sectional observational study was conducted from October 2017 to February 2018, at the infertility clinic of Calcutta National Medical College and Hospital, after getting clearance from the Institutional Ethics Committee.

Sample size:
A study conducted in 2016 in a tertiary hospital in North India concluded that the prevalence of depression in women suffering from infertility was 59%. [11] Considering a Confidence Interval of 95%, and relative precision of 10%, the sample size was calculated to be 267. 260 couples consented to participate in the study. Thus final sample size was 260 couples (520 individuals).

Sampling technique:
The infertility clinic of CNMC&H has average daily OPD attendance of 30 couples between 9am – 2pm. During pre-testing of the schedule, it was found that each interview took 30 minutes on an average. Therefore, maximum 10 interviews could be conducted in a typical OPD day which translates to inclusion of every 3rd patient. The first couple was selected by lottery method among the first 3 registered couples of the day. 3 OPD days of the week were randomly selected. A total of 260 couples could be interviewed over the next 3 months of data collection period, satisfying the inclusion and exclusion criteria of the study.

Inclusion criteria:
Women failing to conceive within 2 or more years of regular unprotected coitus
Couples whose cause of infertility has been determined and investigations completed
All couples irrespective of whether treatment was received or not

Exclusion criteria:
Patients who have previously been treated by psychiatrics for anxiety disorders and depression
Patients who did not give written consent
Illiterate people who were unable to self-administer the scale

Absence of spouse at the time of data collection

Study tools:

A pre-designed, pre-tested, semi-structured schedule was used. DAS (Depression Anxiety Stress)-21 scale, [12] pre-validated in Hindi and Bengali, was administered to both the husband and wife. The DASscale is a set of 3 self-reported scales designed to measure the negative emotional states of depression, anxiety and stress. Subjects were asked to use a 4-point severity scale to rate the extent to which they have experienced each state. Modified B.G. Prasad's scale, January 2017 [13] was used to assess the socio-economic status. Educational status was determined with the help of Indian standard classification of education by Ministry of Human Resource Development, Government of India. [14]

Study procedure:

The couples, who were suffering from infertility, attending Gynecology OPD, were explained about the purpose of the study. Consent was taken from the husband and wife, prior to administration of the schedule. Previous treatment history was obtained from medical records and laboratory reports. The couples were interviewed with the help of a semi-structured schedule. The DAS-21 scale was self-administered by both the husband and wife.

They were assured complete confidentiality and anonymity.

Analysis:

Data analysis was done using IBM SPSS software for Windows, version 20.0. Data obtained was analyzed for difference in the values of study parameters within the sampled couples. Descriptive statistics was calculated as frequency, percentage, mean, median, and range. Chi square test was used for univariate analysis to assess any possible relationship between the study parameters and mental health status of the couples. p value of less than 0.05 was considered significant throughout the analysis.

RESULTS

The mean age of the female participants was 27.4 years with a range of 21-35 years and that of the male participants was 33.3 years with a range of 24-42 years. The socio demographic characteristics of the sampled couples are shown in Table 1.

Table 1: Distribution of couples according to their socio-demographic profile (n=260)

Socio-demographic Profile			Number	Percentage
Religion	Hindu		169	65.0
	Muslim		91	35.0
Residence	Rural		124	47.7
	Urban		136	52.3
Socio-economic status	Upper class		23	8.8
	Upper middle class		40	15.4
	Middle class		110	42.3
	Lower middle class		61	23.5
	Lower class		26	10.0
Education	Less than High school	Male	124	47.7
		Female	111	42.7
	High school and above	Male	136	52.3
		Female	149	57.3

The couples were further studied in different groups on the basis of their type, cause and duration of infertility (Tables 2a, 2b).

Table 2a: Distribution of couples according to their infertility type (n=260)

Infertility type	Number	Percentage
Primary	170	65.4
Secondary	90	34.6

Around two-third (65.4%) of the couples were suffering from primary infertility.

Table 2b: Distribution of couples according to the cause of infertility (n=252)

Infertility cause	Number	Percentage
Male Factor	41	16.3
Female Factor	154	61.1
Both	24	9.5
Unexplained	33	13.1

*The causes of infertility for 8 couples were not diagnosed at the time of the study

Female factor was responsible for infertility in nearly two-third (61.1%) of the couples. The median duration of infertility among the studied couples was 7 years (IQ range- 3 years).

Tables 3a and 3b show the distribution of couples according to their grades of depression, anxiety and stress as Mild, Moderate, Severe and Extremely severe with the help of the DAS-21 scale.

Table 3a: Distribution of females according to their emotional states (n=260)

Emotional States	Grading of Emotional States				
	Absent No (%)	Mild No (%)	Moderate No (%)	Severe No (%)	Extremely severe No (%)
Depression	130 (50.0)	53 (20.4)	39 (15.0)	25 (9.6)	13 (5.0)
Anxiety	8 (3.1)	20 (7.7)	77 (29.6)	132 (50.8)	23 (8.8)
Stress	20 (7.7)	71 (27.3)	121 (46.5)	30 (11.6)	18 (6.9)

Depression was present in 50.0%, anxiety in 96.9% and stress in 92.3% of the female participants. Majority of the female participants had mild depression (20.4%), severe anxiety (50.8%) and moderate levels of stress (46.5%).

Table 3b: Distribution of males according to their emotional states (n=260)

Emotional States	Grading of Emotional States				
	Absent No (%)	Mild No (%)	Moderate No (%)	Severe No (%)	Extremely severe No (%)
Depression	106 (40.8)	78 (30.0)	53 (20.4)	13 (5.0)	10 (3.8)
Anxiety	8 (3.1)	41 (15.8)	95 (36.5)	90 (34.6)	26 (10.0)
Stress	12 (4.6)	33 (12.7)	156 (60.0)	50 (19.2)	9 (3.5)

Among the male study participants, depression was present in 59.2%, anxiety in 96.9% and stress in 95.4%. Majority of the male participants had mild depression (30.0%), moderate anxiety (36.5%) and severe levels of stress (60.0%).

Although not statistically significant, it was found that with advancing age, more women were affected by stress, anxiety and depression; however this did not hold true for men. Couples residing in urban areas were more affected by stress. Depression and anxiety were found to be more in men who had higher educational qualification. With increasing socio-economic status, more couples were affected by anxiety, stress and depression.

Table 4a: Association of mental health status with infertility type among females

Infertility Type	Mental Health Status in Females					
	Anxiety (n=252)		Stress (n=240)		Depression (n=130)	
	Mild-Moderate No (%)	Severe-Extremely Severe No (%)	Mild-Moderate No (%)	Severe-Extremely Severe No (%)	Mild-Moderate No (%)	Severe-Extremely Severe No (%)
Primary	45 (27.8)	117 (72.2)	125 (81.2)	29 (18.8)	63 (72.4)	24 (27.6)
Secondary	52 (57.8)	38 (42.2)	67 (77.9)	19 (22.1)	29 (67.4)	14 (32.6)
	χ^2= 21.994, df= 1, p= 0.000		χ^2= 0.191, df=1, p= 0.661		χ^2= 0.146, df= 1, p= 0.702	

It can be concluded from Table 4a that there is a significant association between the grades of anxiety present in females and the type of infertility (p=0.000).

Table 4b: Association of mental health status with infertility type among males

Infertility Type	Mental Health Status in Males					
	Anxiety (n=252)		Stress (n=248)		Depression (n=154)	
	Mild-Moderate No (%)	Severe-Extremely Severe No (%)	Mild-Moderate No (%)	Severe-Extremely Severe No (%)	Mild-Moderate No (%)	Severe-Extremely Severe No (%)
Primary	72 (44.4)	90 (55.6)	118 (74.7)	40 (25.3)	79 (84.0)	15 (16.0)
Secondary	64 (71.1)	26 (28.9)	71 (78.9)	19 (21.1)	52 (86.7)	8 (13.3)
	χ^2= 16.561, df= 1, p= 0.000		χ^2= 0.351, df=1, p= 0.553		χ^2= 0.0457, df= 1, p= 0.830	

It can be inferred from Table 4b that there is a significant association between the grades of anxiety present in males and the type of infertility (p=0.000).

Table 5a: Association of mental health status with infertility duration among females

Infertility duration	Mental Health Status in Females					
	Anxiety (n=252)		Stress (n=240)		Depression (n=130)	
	Mild-Moderate No (%)	Severe-Extremely Severe No (%)	Mild-Moderate No (%)	Severe-Extremely Severe No (%)	Mild-Moderate No (%)	Severe-Extremely Severe No (%)
2 – 7 years	73 (65.2)	39 (34.8)	90 (90.0)	10 (10.0)	32 (86.5)	5 (13.5)
7 - 14 years	24 (17.1)	116 (82.9)	102 (72.9)	38 (27.1)	60 (64.5)	33 (35.5)
	χ^2=60.642 , df=1 , p=0.000		χ^2=10.714, df=1, p=0.001		χ^2=6.176 , df=1 , p=0.013	

Table 5a shows that there is a significant association between the grades of anxiety(p=0.000), stress (p=0.001) and depression (p=0.013) present in females, and the duration of infertility.

Table 5b: Association of mental health status with infertility duration among males

Infertility duration	Mental Health Status in Males					
	Anxiety (n=252)		Stress (n=240)		Depression (n=130)	
	Mild-Moderate No (%)	Severe-Extremely Severe No (%)	Mild-Moderate No (%)	Severe-Extremely Severe No (%)	Mild-Moderate No (%)	Severe-Extremely Severe No (%)
2 – 7 years	76 (67.9)	36 (32.1)	93 (86.1)	15 (13.9)	29 (85.3)	5 (14.7)
7 - 14 years	60 (42.9)	80 (57.1)	96 (68.6)	44 (31.4)	102 (85.0)	18 (15.0)
	χ^2=15.654, df=1 , p=0.000		χ^2=10.35, df=1, p=0.001		χ^2=0.002, df=1 , p=0.966	

Table 5b shows that there is a significant association between the grades of anxiety (p=0.000) and stress (p=0.001) present in males, and the duration of infertility.

DISCUSSION

The sample consisted of almost equal number of participants residing in the rural and urban areas. Almost half belonged to the middle class. 65.4% couples were suffering from primary infertility and the rest from secondary infertility.

The male factor is responsible for about 30-40% cases of infertility, the female factor for 40-55%, and both are responsible in about 10% cases. The remaining 10% is unexplained. [15] In this study, male factor was found to cause infertility in 16.3% cases, female factor in 61.1% cases and both factors in 9.5% cases. The cause was unexplained in 13.1% cases. The causes of infertility for 8 couples were not diagnosed at the time of the study.

In this study, depression was absent in half of the women, and 5% had extremely severe depressive symptoms. A study conducted in North India used Beck's Depression Inventory (BDI) to assess depression, and it was found that 41.1% women had minimal range depressive symptoms and 8.82% had severe depression. [11] Anxiety was present in almost all women, and half of them had severe anxiety traits. Almost half the women were moderately stressed.

According to another study conducted in Pakistan, which used the DAS-42 scale, 41% had moderate to severe anxiety and 29% had extremely severe anxiety. Moderate to severe stress was seen in half of the women. [10]

Depression was present in 3 out of 5 men. One-third of the men had mild depressive symptoms and 10% had extremely severe depression. Anxiety was present in almost all men, with 70% having moderate to severe levels. 60% men had moderate levels of stress. These findings are not in accordance with a study conducted at Iran in 2017 which established that females were 2.26 times more likely to have anxiety symptoms than males. [16]

Those females who were having primary infertility were suffering more from severe to extremely severe anxiety than those having secondary infertility. The relationship between the grade of anxiety in females and the type of infertility was found to be significant. No association could be found between the levels of stress and depression in females and the type of infertility. Another study concluded in Jordan concluded that no relationship could be established between the grades of

depression in females and primary infertility. [17]

Mild to moderate levels of anxiety was found in 71% of men suffering from secondary infertility however 56% of the men suffering from primary infertility had severe to extremely severe levels of anxiety. There was significant relationship between the levels of anxiety in men and the type of infertility. No association was found between the levels of stress and depression in men and the type of infertility.

There was significant association of the severity of anxiety, stress and depression in females and the duration of infertility. Those who have longer duration of infertility have significantly more severe or extremely severe anxiety than those who have less duration. However, for stress and depression, both the groups were affected more by mild to moderate levels. A study by Ramezanzadeh et al, found that duration of infertility had significant relationship with both anxiety and depression present in females. [18]

Significant association was also found between the severity of anxiety and stress in males and the duration of infertility. Those males who were having infertility for 7 years or more had severe to extremely severe levels of anxiety as compared to those who had less duration. However for stress, both the groups were affected more by mild to moderate levels.

LIMITATIONS:
1) This was a clinic-based study; hence the conclusions drawn from this study may have limited generalizability.
2) The scale was self-reported and hence the possibility of subjective bias could not be ruled out.
3) This study had stringent inclusion criteria in the fact that it required fulfillment of complete infertility investigation profile of the couples, and diagnosis of cause of infertility.
4) There may be protopathic bias while drawing inferences from the study. Being a cross-sectional study, it cannot

fully establish whether a factor was present before the onset of infertility or not. It is difficult to say whether the mental health problems among the couples existed earlier to infertility.
5) As this was a cross sectional study temporal association could not be studied.
6) This study was unable to differentiate whether the participants had primary or secondary anxiety disorders and whether they had endogenous or reactive depression

CONCLUSIONS AND RECOMMENDATIONS

2[nd]November is celebrated as world fertility day. Such opportunities should be grasped to disseminate information on preventive and curative aspects of infertility, increase public awareness to improve preventive behavior and provide information on adoption agencies and legal procedures. The awareness of policy makers should be raised and elaboration of a policy on infertility care as part of National integrated reproductive health care programme. Assessment of mental health status of the couples should be integrated with infertility management, so that counseling and treatment can be initiated as early as possible. There is a dearth of epidemiological studies on infertility in India, particularly in West Bengal. Majority of research in this area is conducted among women; however infertility is not just a woman's issue. Currently, there is lack of data on global male infertility in terms of prevalence estimates.

A large proportion of patients were found to have clinically undiagnosed anxiety, stress and depression. The mental health status of all patients suffering from infertility should be screened and reviewed by psychologists and psychiatrists. Counseling and initiation of early treatment would help improve their mental health status and reduce the burden of the disease.

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