Original Article

Distress in Infertile Males in Manipal-India: A Clinic Based Study

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Abstract

Background: Being infertile comes as an overwhelming realization for couples trying to conceive. In consideration of rising rates of infertility worldwide, clinicians in India have also begun exploring this field for new possibilities, development and research. The purpose of this study was to estimate the proportion and predictors of infertility specific stress in males diagnosed with primary infertility.

Methods: This cross-sectional research was conducted in an assisted reproduction center, Manipal, India, on 300 infertile married males. The tools were "semi-structured questionnaire" compiled by the authors, "ICD-10 Classification of Mental and Behavioural Disorders (Clinical Descriptions and Diagnostic Guidelines) and" Psychological Evaluation Test for infertility. Multiple logistic regression analysis was carried out on data with p-value fixed as 0.05.

Results: The presence of stress was reported in 72% of male participants. The predictors of stress were nature and severity of their infertility diagnosis, sperm defects, urological condition and experience of corrective surgery undergone for it. Psychological stress in men was also predicted by present and past history of significant psychiatric morbidity and coping difficulties associated with it.

Conclusion: The stress is both a common experience and at times a clinical condition associated with deteriorating mental and physical health in men seeking fertility treatments. As a prerequisite, Indian fertility clinics need to treat stress as an identifiable condition and devise ways of addressing it at all stages of assisted conception and reproductive treatments.

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Introduction

The psychological wish for a child is principally conditioned by socio-cultural frameworks in which individuals are born and brought up. Being infertile can be a painful emotional experience particularly during the reproductive years of one's life. As per the stress and coping paradigms of infertility, such stress revolves around many variables like severity of infertility diagnosis, success of fertility treatments, reactions of others, and psychological characteristics of couples (1). Such stress routinely lingers in the lives of infertile couples and is ultimately resolved by experience of conception, adoption, surrogacy or acceptance of involuntary childlessness by the couple (2, 3). There is a large body of evidence that infertility evokes more psychological distress for women than for men (4, 5), probably as women are more verbal about their psychological

concerns, willing participants in research and direct recipients of major infertility treatments, procedures, its outcomes (cycles of ovulation induction, intra-uterine inseminations, *in vitro* fertilization, oocyte pickups, embryo transfers, fetal reduction, pregnancies, miscarriages, child-birth). Most of the studies in the existing literature thus gyrate around "the female's psychological burden" in assisted treatments and aimed at interventions derived for reducing it, with the final objective of improving implantation and live birth rates in them. However, this doesn't mean that men are non-distressed and less affected by infertility. Research reviews have reported that infertile men often undergo subdued forms of grief known as disenchanted grief which goes unrecognized or is perceived as trivial (6). Latent emotional turmoil in them thus remains uninvestigated and untreated by clinicians. A look at the literature on psychiatric morbidity in infertile men has shown that psychiatric morbidity is present in 10.2% of males seeking treatments, with mood disorders in 9.2%, major depression in 5.1% and anxiety disorders in 4.9% of men. Likewise, 17% of infertile men have either anxiety and/or depressive disorders (7). Yet, only 21% of them receive psychological treatments (8). Furthermore, the condition worsens for those diagnosed with severe male factor infertility. Reviews have emphasized that stress response in men is exaggerated by severity of male-factor infertility diagnosed in them (9, 10). Psychological response in men to male-factor infertility is experienced in the form of fears of social stigma, worries, secrecy, feelings of personal failure, lowering of self-esteem, guilt, anger, shame, sexual and marital dissatisfaction, and powerlessness in active stages of assisted reproductive procedures (10-14). Moreover, researchers have revealed that when an andrological factor is involved, levels of fearfulness and psychosomatic complaints are more among the afflicted men (15, 16).

Effective coping acts as a protective factor against stress in couples. Also, men and women are quite disparate in their stress-appraisals and ways of coping. Many studies of coping with life stressors reflect that women report more interpersonal and social stressors and resort to emotion-focused coping strategies whereas men report more financial-occupational stressors and use more problem focussed coping strategies (17). Reviews support that such coping responses also mediate infertility stress in both men and women (18, 19).

The present study was conceived in consideration with these avenues reflected from the reviews of literature. The aim of the present study was to conduct a clinic based research to estimate the proportion and predictors of infertility specific stress in men diagnosed with primary infertility.

Methods

Study participants: This cross-sectional study was conducted in assisted reproduction center of a teaching hospital, Manipal, India. The sample comprised of 300 infertile married men referred for psychological evaluation, by the infertility specialists. The duration of the study was 9 months. It included consenting men diagnosed with primary infertility, whereas excluded those who were diagnosed with secondary infertility.

Data collection: Patients meeting the study criteria were educated about its purpose, its implications and were given a choice of voluntary participation. Consent was taken from the patients who were willing to become a part of this study. The consenting patients were subsequently interviewed and assessed on semi-structured questionnaire, ICD-10-clinical descriptive and diagnostic guidelines (20) and for infertility specific stress, using the "psychological evaluation test for infertility" (21). The Psychological evaluation test for infertility is a 15 item clinician rated questionnaire detecting emotional reactions to infertility stress. The responses on this test were assigned on a 4 point Likert scale. A score of above 30 points on this test is defined as cut-off point for identifying individuals who require psychological support. The test has reliability with Cronbach's alpha coefficient of 0.88. It is yet to be used in Indian studies; however, its utility has been established by a research conducted in developing countries (22). In post-assessments, all participants were educated about their scores and a session of stress-management was offered by the principal investigator (a licensed clinical psychologist with working experience in the area of infertility and reproductive psychology). Data records and handling were maintained by the principal investigator and kept strictly confidential. This study was a part of a larger doctoral research project. Ethical clearances were taken prior to conduct of this research work. All ethical standards were strictly maintained as per the Declaration of Helsinki.

Sample size and statistical analysis: Sample size was calculated on the basis of anticipated current

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proportion of stress in infertile men visiting our infertility clinic which was expected to be at least 60%. Considering relative precision of 10% and 95% confidence level, the minimum number of participants to be selected for the study was 256. Data was entered and analyzed using SPSS (SPSS for windows, version 15, Chicago, SPSS Inc). The results were reported in medians, percentages, odds ratio and 95% confidence interval (CI). Chi square test was used for univariate logistic regression analysis followed by multiple logistic regression to see the association between infertility specific stress and the predictor variables. Multiple logistic regression was done using backward stepwise likelihood ratio method with entry probability of 0.1 and exist probability of 0.2. The p-value <0.05 was considered statistically significant.

Results

The study participants comprised of a total of 300 participants with age range of 24-54 years (median of 35 years), with martial years ranging from 8 months to 20 years (median of 2 years) and duration of infertility ranging from 0 to 12 years with a median of 1 year. 71% of the men were educated up till secondary and 62% were from rural, and 38% from suburban to urban setups. Occupation wise analysis of the data showed that 44% were servicemen or small scale businessmen. 49% of men belonged to an income group of 10,000-20,000 Indian rupees per month and 25% had an income of above 21,000-30,000 Indian rupees per month. A distribution of nature of past treatments suggested that 45% of couples had no history of previous treatments, 56% had taken 1 to 12 cycles of ovulation induction, and 88% had taken 1 cycle of intra-uterine insemination before their first consultation at our center.

The data showed that in couples with primary infertility visiting our clinic, 30% were known cases of combined factor infertility, 29% of female factor infertility, 25% of male factor infertility and 15% of unexplained factor infertility. Within male factor infertility, 1% had normospermia/absence of any urological abnormality,15% of males were diagnosed with mild to moderate oligospermia, 5% with severe sperm defects like oligospermia, oligo-asthenospermia, azoospermia or aspermia or teratozoospermia and 2% with untreated other urological conditions like unilateral or bilateral varicoceles, hydroceles. Data additionally suggested that 94% had not undergone urological surgery, whereas 6% had undergone corrective surgeries for varicoceles and hydroceles. Moreover, 79% of females and 90% of males had no other comorbid general medical diseases.

Proportion of infertility specific stress: Overall, the proportion of infertility specific stress among men was found to be 72%. The results of univariate regression analysis for associations between current infertility specific stress and demographic factors are presented in table 1 below. Table 1 illustrates odds ratio of infertility specific stress in males and its association with variables like increasing marital years and duration of infertility.

Table 2 depicts univariate logistic regression analysis for associations between current infertility specific stress and clinical variables like infertility type, history of urological surgery, severity of urological diagnosis and sperm defects, presence of comorbid general medical diseases, present and past psychiatric morbidity of the patient, and infertility related coping difficulties.

Table 1. Associations between infertility specific stress in men and demographic factors

Variables	Infertility specific stress		Odds ratio (95%CI)	P-value *
	Yes (%) n=217	No (%) n=83		
Age				
24-32 years (n=100)	75 (75)	25 (25)	1	--
33-39 years (n=140)	98 (70)	42 (30)	1.09 (0.52, 2.26)	0.81
≥40 years (n=60)	44 (73.3)	16 (26.7)	0.85 (0.43, 1.66)	0.63
Being married				
≤5 years (n=182)	125 (68.7)	57 (31.3)	1	--
>5 years (n=118)	92 (78.9)	26 (29.0)	1.61 (0.94, 2.75)	0.08
Duration of infertility				
≤5 years (n=192)	132 (68.75)	60 (31.25)	1	--
>5 years (n=108)	85 (78.70)	23 (21.30)	1.68 (0.96, 2.91)	0.06

* Univariate Logistic Regression

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Table 2. Associations between infertility specific stress in men and clinical variables

Variables	Infertility specific stress		Odds ratio (95%CI)	P-value *
	Yes (%) n=217	No (%) n=83		
Past history of infertility treatments				
≤5 years (n=271)	195 (71.95)	76 (28.05)	1	--
>5 years (n=29)	22 (75.86)	7 (24.14)	1.22 (0.50, 2.98)	0.65
Infertility type				
Female factor (n=89)	56 (62.92)	33 (37.07)	1	--
Male factor (n=76)	64 (84.21)	12 (15.78)	1.55 (0.75, 3.22)	0.24
Combined factor (n=91)	74 (81.31)	17 (18.68)	4.87 (2.01, 11.44)	<0.001
Unexplained (n=44)	23 (52.27)	21 (47.72)	3.97 (1.80, 8.77)	<0.001
Wife's history of gynaecological surgery				
No (n=66)	47 (71.21)	19 (28.78)	0.93 (0.51, 1.71)	0.82
Yes (n=234)	170 (72.64)	64 (27.35)	1	--
History of urological surgery				
No (n=281)	199 (70.81)	82 (29.18)	1	--
Yes (n=19)	18 (94.73)	1 (5.26)	7.41 (0.97, 56.47)	0.05
Cycles of ovulation induction with timed intercourse				
Nil (n=134)	89 (66.41)	45 (33.58)	1	--
1-3 cycles (n=119)	92 (77.31)	27 (22.68)	0.64 (0.28, 1.30)	0.19
4-12 cycles (n=47)	36 (76.59)	11 (23.40)	1.04 (0.46, 2.31)	0.92
Cycles of intra-uterine insemination				
0-1 (n=264)	187 (70.83)	77 (29.16)	1	--
2-6 (n=36)	30 (83.33)	6 (16.66)	2.05 (0.82, 5.14)	0.12
Presenting psychiatric morbidity				
1 Nil (123)	63 (51.21)	60 (48.78)	1	
2 Subclinical & Clinical (177)	154 (87.00)	23 (12.99)	6.37 (3.36, 11.19)	<0.001
Coping difficulties				
No (n=106)	45 (42.45)	61 (57.54)	0.12 (0.06, 0.22)	--
Yes (n=65)	61 (93.84)	4 (6.15)	2.47 (0.80, 7.63)	<0.001
Off & On (n=129)	111 (86.04)	18 (13.95)	1	0.11
Comorbid medical condition				
Nil (n=268)	189 (70.52)	79 (29.47)	0.34 (0.11, 1.01)	0.05
Present (n=32)	28 (87.5)	4 (12.5)	1	--
Wife's gynaecological diagnosis				
Ovarian factors (n=101)	71 (70.29)	30 (29.70)	0.77 (0.37 1.61)	0.48
Uterine factors (n=56)	43 (76.78)	13 (23.21)	1.07 (0.45, 2.55)	0.86
Tubal factors &other (n=86)	60 (69.76)	26 (30.23)	0.46 (0.35, 1.60)	0.75
Nil (n=57)	43 (75.43)	14 (24.56)	1	--
Severity of urological diagnosis and sperm defects				
Nil (n=134)	80 (59.70)	54 (40.29)	1	--
Mild-mod oligospermia, oligoastheno spermia (n=67)	48 (71.64)	19 (28.35)	1.70 (0.90-3.21)	0.09
Severe oligospermia, teratozoospermia, azoospermia, aspermia (n=99)	89 (89.89)	10 (10.10)	6.00 (2.86-12.58)	<0.001
Past psychiatric illness				
No (n=83)	17 (20.48)	66 (79.51)	1	--
Yes (n=217)	83 (38.24)	134 (61.75)	0.41 (0.23-076)	0.004

* Univariate Logistic Regression

As per tables 1 and 2, several factors were selected for multiple logistic regression analysis for determining the predictors of infertility stress in men. Table 3 presents results of multiple regres-

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Table 3. Multiple logistics regression analysis by backward stepwise likelihood ratio to identify predictors for ISS among men

Variables	Presence of infertility specific stress Odds Ratio (95% CI)	P-value
Severity of urological diagnosis and sperm defects	--	--
Nil	1	--
Presence of mild/moderate/severe defects	2.30 (1.59-3.34)	<0.000
Presenting psychiatric morbidity	--	--
Nil	1	--
Subclinical and clinical	6.68 (3.65-12.23)	<0.000

Table 4. The various co-morbid psychiatric morbidity present in infertile men at their first visits

Psychiatric diagnosis	Infertility specific stress	
	Yes (n=217)	No (n=83)
Adjustment disorder	14	0
Anxiety disorder	23	0
Grief reaction	1	0
Dysthymia	5	0
Mixed affective disorder	16	1
Subclinical mood disorder	95	22
Co-morbid substance dependence disorder with or without the above conditions (Alcohol and tobacco)	33	11
Total	187	34

sion analysis. It shows that owing to limitations in sample size in our study, only a few variables presented in tables 1 and 2 were found to be statistically significant, in multiple regression analysis. As per table 3, the suitable predictors for infertility specific stress in men were the severity of urological diagnosis and sperm defects diagnosed in them, and history of presenting psychiatric morbidity in regard to infertility stressors faced by men.

Table 4 describes the various comorbid psychiatric morbidity in men at their first visits.

Discussion

Infertility is often a shared experience of the couple. Coping difficulties in any one of them in the marital dyad often affects and upsets the life of the other. Experts in the field of reproductive psychology urge that infertility stress threatens an individual's self-identity as a woman or man (23-25). Furthermore, researchers have often been absorbed in capturing women's experience of infertility as they inevitably bear the brunt of conception, implantation, gestation, miscarriages or childbirth. The grief of infertile men is often overlooked (26-28). Consequently, addressing emotional turmoil in men often evades the minds of researchers and infertility experts, particularly when their wives are in active phases of assisted conception or reproductive treatments. To address this central predicament, the present cross sectional study was conducted, aiming to carry out preliminary clinic based investigation to explore the experiences of stress in infertile men seeking infertility treatments.

The aim of the present study was to estimate the proportion and predictors of stress in men diagnosed with primary infertility. The results of this study suggest that the proportion of infertility specific stress among men was high. More than half of infertile men visiting our clinic reported significant infertility specific stress at their initial consultation. Adding to this, our results suggest that certain factors were more closely associated with stress in men. These were nature of diagnosis, severity of urological condition, severity of abnormalities in husband's semen parameters, and experience of undergoing urological surgeries. Additionally, certain variables were found to be weakly statistically significant in our data like increasing years since marriage and duration of infertility, however these were clinically found to be closely related to increasing stress in men. Diagnosis-wise, our results reflect that men experience more distress when the couple is diagnosed with combined factor infertility or unexplained infertility possibly due to greater challenges and uncer-

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tainty associated with these diagnoses. A diagnosis of combined factor infertility was 5 times more distressing followed by a diagnosis of unexplained infertility which is 4 times more distressful than a diagnosis of either female or male factor infertility. Moreover, stress in males with conditions like severe oligospermia, teratozoospermia, azoospermia, aspermia was 6 times greater than those with mild to moderate oligospermia, oligoasthenospermia in comparison to those diagnosed with normospermia or no urological abnormality. These findings are corroborated by research evidences from studies (10, 29-32). Similar results have been reported by other researchers substantiating that in couples diagnosed with male factor infertility, men reacted negatively to treatments (33). Furthermore, men expressed that their experience of urological surgery was highly distressing. A minority of them opted to undergo corrective surgeries for phimosis, varicoceles, hydroceles, and experienced 7 times more emotional distress than those who had not undergone any. These findings were also supported by existing research particularly for stress in men undergoing micro-epididymal sperm aspiration/testicular sperm extraction (34).

Infertility specific stress in men was also seen to be associated with psychiatric morbidity in them. Our data suggests that 59% of distressed infertile men experienced either clinical (20%) or subclinical (39%) forms of psychiatric morbidity, at the time of their initial infertility work-ups. Furthermore, those with significant psychiatric morbidity experience 6 times greater infertility stress while undergoing treatments than the non-distressed counterparts. Intriguingly, our data reflected that both distressed and non-distressed men reported features suggestive of varied psychiatric disorders like adjustment disorders, anxiety disorders, grief reaction, dysthymia, mixed affective disorders, subclinical mood disorders and co-morbid substance dependence disorder (Alcohol and tobacco).

Nevertheless, stress coping in individuals mediates mental and physical health outcomes in them. However, male participants in this study expressed that they faced difficulty in coping and were particularly bothered by the effect of social stigma related to infertility and often dealt with these stressors by maladaptive coping strategies like denial or escape-avoidance coping strategies. Results of multiple binary logistic regression analysis in our study confirmed stronger associations between male's infertility stress and variables like severity of urological condition/sperm defects, presenting history of psychiatric morbidity in men and effects of maladaptive coping strategies in men. Theoretically overtime, such maladaptive coping mechanisms can lead to chronic and severe forms of stress culminating in psychopathology in individuals. Similar findings have also been supported by other studies affirming that psychiatric morbidity, body image disturbances and sexual disturbances are higher in those who cope with denial, distancing, and avoidance strategies (9-11, 35-37).

Another interesting dimension that adds to distress which was highlighted by the participants in this study was their socio-cultural experiences. India is a nation with myriad socio-cultural variations and complexities. Our participants, who were exclusively from Manipal region and around, shared that in this area they found that family was mostly supportive throughout diagnosis and treatment. However, the society at large despised and even discriminated them. Perception of being flawed, cursed, and related concealment, humiliation, shame, guilt with respect to infertility were reported by most of these men and their wives. Many a time, couples with sexual dysfunctions ended in being in a non-consummated marriage. Moreover, to avoid socio-cultural rebuke, this was usually kept as a secret by the couple. This was also supported by another research (38). A diagnosis of sperm defects was devastating to men as this also had threatening social consequences. Having children within the first 2-3 years of marriage was the usual norm. Hence, this was a massive pressure reported by couples soon after they got married. When the couple didn't have a child, their lives were perceived by others to be unfulfilled and dull. Opting for faith healing and donor insemination was thus revealed as the last embarrassing choice by men with severe sperm defects and likewise concealed from neighbours, cousins, and society. Also, adoption in India carried a higher stigma (39). Post-diagnosis and while taking treatment, couples often refrained from socializing to avoid social coercion, nagging, taunts, fertility related pressures and intrusive suggestions from others. Similar experiences of infertility in India have also been reported by other studies (40, 41).

The implications of the results of the present study are that this study is the first of its kind conducted in India, reporting the proportion of stress and detailing the factors that are likely to predict stress. Moreover, our data supports evidences derived from other studies that even in men, there

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lies a need to address emotional stress, in their initial stage of infertility diagnosis, since it may interfere with normal sexual response, spermatogenesis, chances of spontaneous or assisted conception and their fertility rates (36, 37, 42, 43). The limitations of the present work are that it remains to be a preliminary investigation that provides a glimpse into the factors related to infertility stress in men. The results of this study should be treated with caution as it was a single clinic based research. Also, other limitations of this work were that it explored restricted psychological variables using methods in which patient related recall and selection biases could have contributed to increased error variances in our data. Lastly, our work was a cross-sectional one, and so the findings were constrained as only a snapshot of certain variables was captured operating within the restricted sample size and limited time frame at which this research was conducted.

Conclusion

The medicalization of infertility has inadvertently led to a disregard for the emotional responses that men and women experience, which include distress and a disruption in the developmental trajectory of normal adulthood. Stress dampens an infertile couple's life significantly and needs to be sensitively elicited in a routine clinical infertility workup. Men seem to be less vocal about the same, yet high proportion of them experience stress. The essential predictors of stress in men are increasing years since marriage and duration of infertility, nature of diagnosis, and severity of sperm defect. Stress is often a comorbidity which is present with florid psychological and psychiatric morbidity and coping difficulties in infertile men. The need of the present hour is to devise bio-psycho-social interventions for men and women undergoing infertility crisis as well as family focussed interventions for the couple, to help them holistically deal with the effects of infertility stress in the longitudinal course of undergoing the usual treatment regimens.

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Conflict of Interest

The authors declare that there are no conflicts of interest.

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