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Original Article

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A Study on Consequences of Infertility among Infertile Couples Attending In-Vitro Fertilization (Ivf) Clinics in Ahmedabad City

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Abstract

Background: Infertility is major life event that brings about social and psychological problems. Infertility is a life crisis with a wide range of socio-cultural, emotional, physical and financial problems. ***Objectives***: 1.To study social, psychological, economic consequences of infertility 2.To detect emotional reactions to the infertility-related stressors ***Methods***: A Cross-sectional study was conducted among 200 infertile couples attending the IVF Clinics in Ahmedabad city. 40 Infertile couples were selected equally from each of the five IVF clinics. ***Result***: Total 179 (89.5%) were Hindus. The average age of the women was 31.4 + 4.0 years. The mean age of men at the time of marriage was 29.0 + 5.8 years while that of women was 25.1 + 4.4 years. The mean duration of marriage life was 6.3 ± 3.7 years. Average expenditure on infertility treatment was ₹1.47 ± 1.13 lacs. The overall median score on the WHO-5 Well-Being Index was 40%, indicating poor well-being. A median score of 23 + 7.9 for Psychological Evaluation Test indicates that 50% of participants scored below this score. 133 couples (66.5%) had Psychological Evaluation Test scores of 30 or lower, suggesting psychological distress among them. ***Conclusion***: Healthcare professionals can offer targeted support and interventions to help manage the psychological challenges.

Key words: ***Infertility, Invitro Fertilization, Psychological evaluation, well-being***

Introduction

Infertility is a disorder of the reproductive system of man or woman defined by the failure to achieve a pregnancy after 1 year or more of regular unprotected sexual intercourse. Infertility may be the result of several factors related to male, female or a combination of both, or may remain sometimes unexplained. Some etiological factors of infertility are preventable. Infertility is often managed through in-vitro fertilization (IVF) and other forms of medically assisted reproductive techniques [1]. Based on data from 1990 to 2021, global estimates for infertility in 2022, Approximately one in six people worldwide have experienced infertility at some point in their lives. The estimated lifetime prevalence of infertility is 17.5%. The estimated period prevalence is 12.6% [2]. In a study conducted in Ahmedabad, prevalence of infertility was found to be 7.4%, with primary and secondary infertility accounting for 3.5% and 3.9%, respectively [3]. Childlessness has its sociocultural, psychological, religious, and financial consequences and according to infertile couples, childlessness as a lifetime tragedy [4]. Infertility is a major life event that brings about social and psychological problems. Infertility is a life crisis with a wide range of socio-cultural, emotional, physical and financial problems. Infertility is often associated with psychological distress because of an inability to attain a desired social role due to their childlessness. About 10 years ago Greil in the year 1997 published a review and critique of the literature on the socio-psychological impact of infertility [5]. Infertility can contribute to marital instability and may increase the risk of divorce or abandonment, potentially resulting in the loss of financial security. Some customary laws and cultural traditions may adversely affect attitudes and social stigma toward infertility[6].

The prevalence of poor well-being was 44.3% in infertile people at Tehran, Iran and also PET score higher than 30 was found in 30.9% of the infertile people in Vietnam indicates a potential need for psychological support [7,8].

Infertility is recognized as a contributing factor to psychological distress, which can negatively impact the effectiveness of assisted reproductive technology (ART). According to the European Society of Human Reproduction and Embryology, approximately one in four infertile women and one in ten infertile men experience symptoms of depression [9]. Psychosocial care plays a crucial role in infertility related management, as most of the patients experience significant emotional distress throughout the process [10]. Infertility is also an important cause of the decline in psychological well-being in infertile couples.

In order to explore the experiences of infertile couples having primary infertility within their socio-cultural context and

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consequences related to infertility, data were collected from IVF clinics in Ahmedabad city.

Objectives

Primary Objectives

1. To study social, psychological, economic consequences of infertility
2. To detect emotional reactions to the infertility-related stressors

Secondary Objectives

1. To find couples needing psychological support

Methods

Study design: A Cross-sectional study

Study population: Infertile couples who had primary infertility attending the IVF Clinics

Study subjects

- **Inclusion criteria:** Couples having primary infertility, those who were given informed consent
- **Exclusion criteria:** Couples attending with secondary infertility

Sample size: 200

Sampling: Infertile couples were selected equally from the registered infertile couples of the IVF clinics of the Ahmedabad city who had given permission.

Data Collection Methods: Data was collected through in-depth interviews by researchers through pre-structured and predesigned validated questionnaire

Variables: Socio-demographics information (age, psychological evaluation through PET, well-being of couples through WHO-5 Well-Being Index, expenditure related to infertility)

Data collection: A Cross-sectional study was conducted among 200 infertile couples attending the IVF Clinics running at Ahmedabad city. 40 Infertile couples were selected equally from all the five IVF centres of the Ahmedabad city who had given permission.

In this study, a total of 200 infertile couples were selected who gave information. The questionnaire comprised 15 questions for the psychological evaluation test (PET) to detect emotional reactions to the infertility-related stressors. The PET (Psychological Evaluation Test) questionnaire for infertile couples does include questions related to infertility, specifically addressing emotional reactions to being questioned by relatives and friends about not having a child. The questionnaire, developed to identify couples needing psychological support, assesses emotional responses to stressors related to infertility, such as social interactions and personal feelings about not having children. A high score on the PET, including questions about infertility, indicates a potential need for psychological support [8,11].

The WHO-5 Well-Being Index measuring mental well-being is useful instrument for evaluating the psychological well-being of infertile couples. It is a brief, self-administered questionnaire that evaluates well-being over the past 14 days. The WHO-5 scale comprises of 5 positively expressed questions items; each rated on a 6 points Likert scale ranging from 0 (at no time) to 5 (all of the time). The raw WHO-5 score is calculated by summing the values of the five individual items, resulting in a total score ranging from 0 to 25. This score can be converted to a percentage score (ranging from 0 to 100) by multiplying the score by 4. Score of zero (0) suggest the poorest well-being, while a percentage score of 100 represents the finest possible quality of life [12].

Study duration: January 2024 to June 2025

Data analysis

Data was entered and stored using Microsoft Excel. Statistical analysis was performed using both Microsoft Excel and Epi Info™ Version 7.2. The analysis of the collected data from infertile couples is intended to analyze the consequences (psychological, social, and economic) associated with infertility. Demographic variables were summarized in tabular form using frequencies and percentages. Nonparametric tests were employed for statistical analysis, with the level of statistical significance at 5%.

Operational definitions

An ailment affecting reproductive system of male and female is infertility, well-defined by the failure to attain pregnancy after one or more years of regular, unprotected sexual intercourse.

Primary infertility refers to the failure to conceive even after consistent unprotected intercourse, without any history of pregnancy priorly. In contrast, secondary infertility occurs when an individual has previously conceived but is now unable to do so.

Results

Out of total of 200, 179 (89.5%) were Hindus infertile couples followed by 21 (10.5%) Muslims. Infertile couples were from Open - General category (41.1%) followed by Socially and Economically Backward Classes - SEBC (35%), Schedule Caste - SC (24.5%). The average age of the women was 31.4 + 4.0 years and men was 33.7 + 4.1 years. The mean age of men at the time of marriage was 29.0 + 5.8 years while that of women was 25.1 + 4.4 years. The mean duration of marriage life without child was 6.3 ± 3.7 years. 72 (36%) infertile couples have marriage life of 6 years or more.

Table I showed the overall median score on the WHO-5 Well-Being Index was 40%, indicating poor well-being. A score at this level suggests the need for further evaluation of potential mental health conditions, particularly depression. Generally, scores below 50% on WHO-5 are considered indicative of reduced well-being and may warrant clinical assessment for depressive symptoms.

Table II depicted a median score of 23 (IQR, 21-32) for Psychological Evaluation Test (PET) indicates that 50% of participants scored below this score value. Additionally, 133 couples (66.5%) had PET scores of 30 or lower, suggesting a substantial proportion experienced notable psychological distress. 66.5% of identified couples needed psychological support.

Figure 1 showed the identified causes of infertility were attributed to female factors in 75% of cases, male factors in 16%, both male and female factors in 7.5%, and unknown causes in 1.5% of cases.

Out of the infertile couples, 48 (24%) were diagnosed with various disorders or health conditions, including polycystic ovarian syndrome (PCOS) (9.5%), hypertension (13%), hypothyroidism (7.5%), diabetes (3%), and tubal blockage (5%). Other identified causes included polyps and suspected endometriosis.

A total of 197 couples (99%) reported bearing the cost of infertility treatment out of their own pocket, while only 2 couples (1%) received reimbursement from the railway department division. The average expenditure per couple on infertility treatment up to the date of the interview was ₹1.47 ± 1.13 lacs. The majority of expenses were incurred for procedures such as laparoscopic surgery for blocked fallopian tubes or endometriosis, intrauterine insemination (IUI), diagnostic investigations and medicine.

Most of the family members (96%) of the infertile couple support them to get the child while 8 (4%) were not supportive of the infertile couples. 60 (30%) couples have tried traditional interventions for infertility treatment, that include consulting traditional healers or ayurvedic treatment like Patanjali.

Table III showed the p-value of 0.839 is not statistically significant ($p > 0.05$), indicating that there is no significant difference in the WHO-5 Well-being Index scores across the different age groups of women. Although there are slight differences in the mean scores across age groups, these differences are small and likely due to random variation rather than a true effect.

According to table IV, The ANOVA test shows a statistically significant effect of age on PET scores ($p = 0.003$). Tukey HSD reveals that women aged 20–30 fall into a subset with significantly lower PET scores, Women aged 30-40 fall into a subset with significantly higher PET scores. The difference between these subsets is statistically significant, indicating that as age increases, PET scores tend to increase. This suggests a positive association between age and PET score, where older women in this study reported higher PET scores than younger women.

Table V described the ANOVA result ($F = 0.349$, $p = 0.706$) indicates that there is no statistically significant difference in WHO-5 well-being scores across different durations of marriage. Mariage duration is not significantly associated with well-being in this study population. The ANOVA result ($F = 4.909$, $p = 0.008$) indicates a statistically significant difference in PET score across marriage duration groups. Women married for 4 to 6 years had the highest mean PET score (27.8), followed by those married 6 years or more (26.6), and the lowest scores were seen in those married 2 to 4 years (23.8). This suggests a positive association between marriage duration and PET score, with a peak in the 4 - 6 years group.

Figure 2 presented a statistically significant but weak positive correlation was found between age and the need for psychological support among couples ($r = 0.18$). This suggests a slight tendency for older couples to require more psychological support; however, the small effect size indicates that age is not a major determinant of psychological support needs in this population.

Figure 3 showed mild positive correlations were observed between couples needing psychological support and duration of marriage ($r = 0.03$). Such correlation indicates a very weak positive relationship between the duration of a marriage and the need for psychological support. This means that as the length of the marriage increases, there is a very slight tendency for the need for psychological support to also increase.

Table I. WHO-5 well-being index score of infertile couples

Sr. No.	WHO-5 well-being index questions regarding how couple felt in the last two week	Mean score
1	I have felt cheerful in good spirits	2.03 ± 1.4
2	I have felt calm and relaxed	1.75 ± 1.3
3	I have felt active and vigorous	1.77 ± 1.4
4	I woke up feeling fresh and rested	1.78 ± 1.2
5	My daily life has been filled with things that interest me	1.71 ± 1.2
Total mean score		**36.14 ± 24.6**

Table II. The PET score (Psychological Evaluation Test) of infertile couples

Sr. No.	Psychological Evaluation Test questions regarding how couple felt in last two weeks	Mean score
1	Are you irritated by the fact of not having children?	1.81 ± 0.52
2	Relatives and friends usually ask about the fact that we don't have children and I don't feel well in this situation	1.80 ± 0.60
3	I am upset when I am invited to a children's birthday party	1.75 ± 0.59
4	I am annoyed when a friend or relative becomes pregnant	1.90 ± 0.75
5	Are you depressed every time you menstruate?	1.76 ± 0.75
6	Is your sexual relationship being impaired by the fact that you have not become pregnant up to now?	1.86 ± 0.64
7	Is your professional activity being impaired due to the lack of children?	1.70 ± 0.68
8	Do you feel inferior to other women due to the fact of not having children?	1.90 ± 0.70
9	Are you a person who is always suspicious or afraid of treatments?	1.85 ± 1.53
10	Do you think you might go crazy if you don't have children?	1.75 ± 0.76
11	Do you feel tachycardia, shortness of breath, pressure in the chest, tremors, and hand sweating when thinking about the fact of not having children?	1.74 ± 0.77
12	Do you feel a sensation of emptiness due to the fact of not having children?	1.78 ± 0.87
13	Is your daily relationship with your husband impaired by the fact of not having children?	1.56 ± 0.64
14	Does the difficulty in having children make you want not to leave home as you used to do and to think that it is better to be isolated from others?	1.45 ± 0.57
15	Do you think about your difficulty in having children during daily life	1.70 ± 0.75
Total mean score ± SD		**26.33 ± 7.46**

Table III. Association of age of women with the total well-being-5 index score

Age group of females (in years)	Total (n)	Total Well-being WHO-5 Index mean score ± SD	Test of significance ANOVA F-test (p value)
20 – 25	24	34.0 ± 23.4	0.281 (0.839)
25 – 30	53	36.4 ± 26.5	

30 – 35	103	37.2 ± 24.6	
35 – 40	20	32.4 ± 22.6	
Total	**200**	**36.1 ± 24.6**	

Table IV: Association of the total Psychological Evaluation Test score with age of women

Age group of females (in years)	Total (n)	Total PET mean score ± SD	Test of significance ANOVA F-test (p value)
20 – 25	24	24.5 ± 5.8	4.929 (0.003)
25 – 30	53	23.6 ± 7.3	
30 – 35	103	27.4 ± 7.2	
35 – 40	20	29.2 ± 7.6	
Total	**200**	**26.2 ± 7.3**	

Table V. Association of the well-being WHO-5 Index Score and total PET score with marriage duration

Marriage duration	Total (n)	Total well-being WHO-5 Index mean score ± SD	Test of significance ANOVA F-test (p value)	Total PET score	Test of significance ANOVA F-test (p value)
2 to 4 years	56	37.9 ± 25.7	0.349 (0.706)	23.8 ± 6.06	4.909 (0.008)
4 to 6 years	72	34.3 ± 25.6		27.8 ± 6.40	
6 years or more years	72	36.6 ± 23.0		26.6 ± 8.55	
Total	**200**	**36.1 ± 24.6**		**26.2 ± 7.3**	

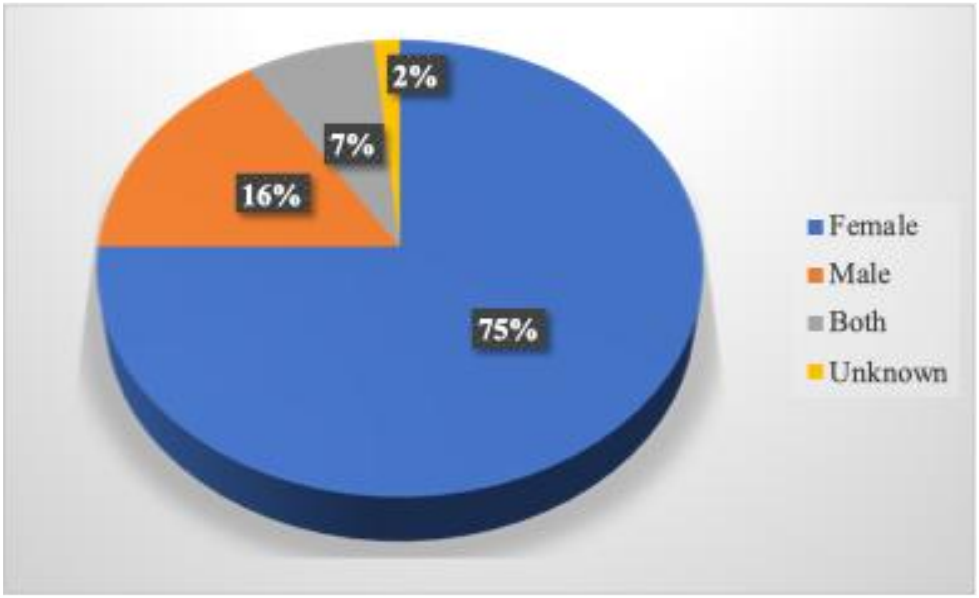

Figure 1. Distribution of identified causes of Infertility among infertile couples

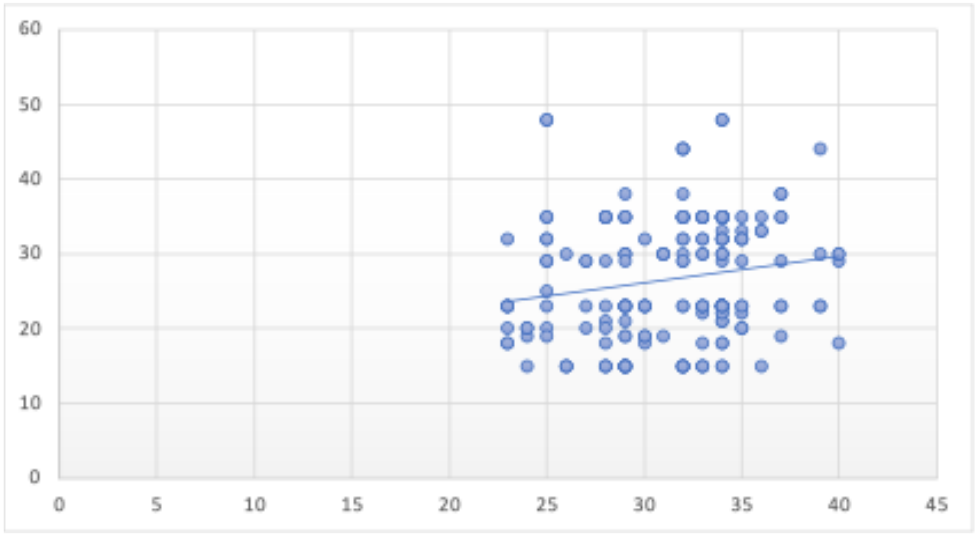

Figure 2. Correlations between PET score and age of the women

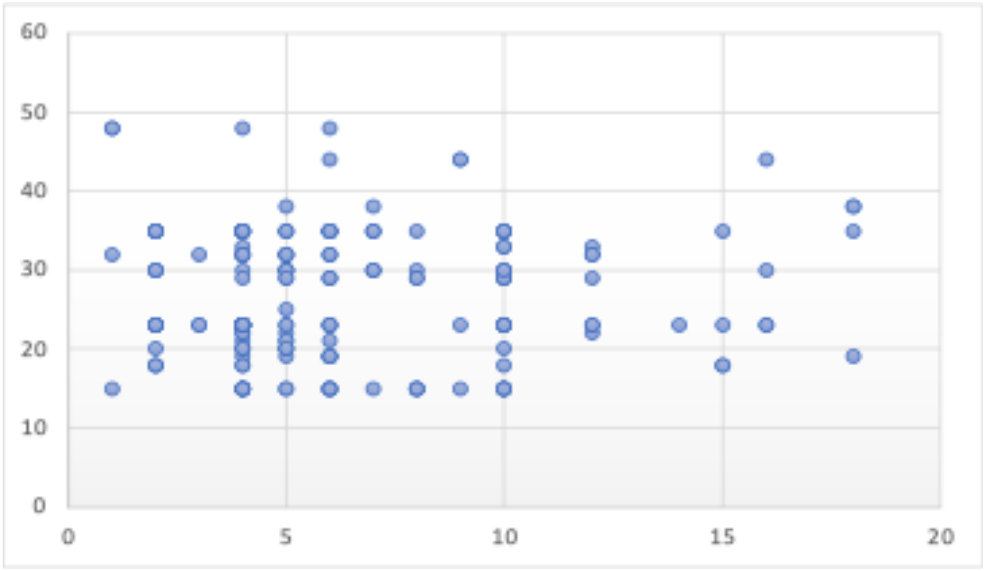

Figure 3. Correlations between PET score and duration of marriage

Discussion

In the current study conducted in Ahmedabad city, among the total selected 200 infertile couple, 179 (89.5%) were Hindus. Infertile couples were from Open - General category (41.1%) followed by Socially and Economically Backward Classes - SEBC (35%). The average age of the women was 31.4 years and men was 33.7. The mean age of men at the time of marriage was 29.0 years while that of women was 25.1 years. The mean duration of marriage life without a child was 6.3 years. 72 (36%) infertile couples have marriage life of 6 years or more. Other study observed that the average age was 31.6 ± 5.1 years for female partners and 33.3 ± 5.8 years for male partners. The causes of infertility were 40.3% for female factors, 20.3% for male factors, 36.3% for both female and male factors, and 3.0% for unknown factors [14]. In the current study, the identified causes of infertility were attributed to female factors in 75% of cases, male factors in 16%, both male and female factors in 7.5%, and unknown causes in 1.5% of cases.

In this research study, the overall median score on the WHO-5 Well-Being Index was 40%, indicating poor well-being. A score at this level suggests the need for further evaluation of potential mental health conditions, particularly depression. Similar research study observed infertile women were found to have higher prevalence of poor psychological well-being than fertile women. Infertility is a major cause of the decline in psychological well-being among infertile women. In most hospitals and infertility clinics, women are treated for infertility, but their psychological well-being is often ignored [13].

Out of the total couples, 48 (24%) were identified with numerous conditions or diseases among infertile couples, including polycystic ovarian syndrome - PCOS (9.5%), hypertension (13%) during the interview. Other study also found that Infertility in both males and females can result from a variety of leading factors. In females, the most common cause is ovarian dysfunction, followed by tubal, uterine, and cervical factors. In some cases, the cause remains unexplained. Among ovarian causes, polycystic ovarian syndrome (PCOS) is particularly notable, with its incidence having risen significantly in recent years. Male infertility, on the other hand, may stem from abnormal sperm production, issues with semen ejaculation, impaired sperm motility, or a low or absent sperm count[15].

Other study found significant direct correlations were observed between infertility-related stress and age ($r = 0.55$, $P < 0.001$), duration of marriage ($r = 0.72$, $P < 0.001$), duration of infertility [16].

The average marital life of couples was 5.6 ± 3.2 years. The mean PET (Psychological Evaluation Test) scores were 28.3 ± 8.4 for women and 25.6 ± 7.2 for men, with no statistically significant difference between the two groups [11].

In comparable study showed similar results in Vietnam, 30.9% of the participants were having PET score higher than 30. Some women expressed intense emotions when discussing their childless marriages, with several breaking down in tears during the interviews. Both men and women reported experiencing profound feelings of sadness, guilt, loneliness, and anxiety about an uncertain future. Social events such as family gatherings particularly during holidays, children's birthday parties, and conversations about children served as painful reminders of their childlessness, often intensifying their emotional distress. None of the informants felt isolated or treated differently because of the fact they do not have children. They were still invited to (children's) birthday parties, social gatherings and events by friends, colleagues and neighbours[8].

Research showed among infertile participants from a referral infertility center in Tehran, Iran observed that the prevalence of poor well-being was 44.3% in infertile people. The mean scores for individual WHO-5 items ranged from 2.44 for question no. 5 'My daily life has been filled with things that interest me' to 2.86 for questions no. 'I have felt cheerful and in good spirits.' The average total WHO-5 index score for well-being was 53.7 ± 23.5 [7].

Some of the infertile couples stated that they have to work harder or take out loans for infertility related treatments, while other infertile couples were not able to take treatment due to financial constraints. In some cases, financially stable parents or in-laws of the infertile couples contributed to the cost of infertility treatment. Such financial burden greatly impacted the couples' daily lives and contributed to emotional distress. Several participants emphasised the extreme cost of IVF, with one stating, 'When IVF is required, this will be no way for us because such high-cost IVF treatment cannot be affordable by us [8].

Infertile couples have strong faith in advancements in medical technology. However, the cost of treatment particularly in vitro fertilization (IVF), which averages around USD 3,000 remains prohibitively high compared to the average income. Nearly half of the participants forcing many to cut back on everyday expenses and save extensively to afford infertility treatment. Family members

often play a crucial role by contributing financially. This economic burden adds significant emotional stress, making infertility especially distressing for couples in southern Vietnam.

The current study found the average expenditure per couple on infertility treatment up to the date of the interview was ₹1.47 ± 1.13 lacs. Minimum treatment including investigation, medicine expenditure from Rs.9,000/- to maximum Rs.10,00,000/- observed in this study. Few studies provided quantitative information on the Out-of-pocket expenditure (OoPP) for infertility treatment. Most participants had initially sought help from traditional healthcare providers, and 46% had consulted four or more sources. The authors compared this expenditure to the national average annual income per capita at the time (Rs.3,835/-), concluding that the financial burden was considerable. Findings were reported in Rwanda, where women had spent an average of USD 73 (range: 27–270) and their male partners USD 91 (range: 22–200) on infertility care [17].

Couples experiencing infertility often face a wide range of emotional challenges, including anger, guilt, sadness, depression, anxiety, and a diminished sense of self-confidence and self-esteem. In addition to these psychological burdens, the financial strain of infertility treatments adds significantly to their stress. In India, a single cycle of IVF typically costs between Rs.1 lacs and 3.5 lacs not including expenses for medications and diagnostic tests. For many couples, the high cost of treatment makes it financially inaccessible, which can lead to feelings of hopelessness. Stress is just one of the many emotional challenges that couples struggling with infertility face often over prolonged periods. Beyond persistent stress, infertility can lead to feelings of guilt, anxiety, depression, and isolation. It may also place considerable strain on the relationship, intensifying emotional tension between partners. Couples frequently talk about losing a satisfying sexual life once infertility treatments begin [18-20].

Treatment for infertility provides an opportunity for infertile couples to become parents. The evolution of assisted reproductive technology (ART) for the treatment of infertile couples is considered an extraordinary restorative accomplishment throughout the world [21]. Access to diagnosis and treatment of infertility reduces social inequities and emotional difficulties. However, infertility treatment involves various medical interventions helping couples to conceive can be expensive, time-intensive, physically and emotionally demanding, and, in some cases, completely inaccessible.

Economic analysis in the context of infertility presents a unique yet essential challenge. For infertility management to become an integrated component of publicly or privately funded healthcare systems worldwide, a thorough understanding of their cost effectiveness, accessibility, and long-term benefits is crucial.

Conclusion

By identifying infertile couples who are vulnerable to emotional risk factors, healthcare professionals can offer targeted support and interventions to help manage the psychological challenges of infertility. This proactive approach can greatly improve the mental health and overall well-being of couples undergoing infertility treatment. The study indicates that providing routine psychosocial care can reduce stress and concerns related to medical procedures, improve couples' well-being and psychological status and increase treatment compliance. Infertile couple should have access to quality care for IVF at an affordable cost.

Limitations

Our study had a few limitations. First, it was conducted in a single urban setting, Ahmedabad which may limit the generalizability of the findings to other regions or populations. To enhance the applicability of future research, multicentric studies involving diverse geographic locations are recommended. Second, the cross-sectional design of our study restricts the ability to establish causal relationships between variables, as it captures data at only one point in time.

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Declaration

Conflict of interest

None

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Nil

Ethical Clearance

Ethical approval was obtained from Institutional Ethics Committee letter no 2024/639 dated 12/08/2024. Informed consent was obtained from the participants before start of the data collection from infertile couple.

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