**Dynamics of social support and its relation with psychological wellbeing among women undergoing invitro fertilization treatment**

**Abstract**

Infertility is a growing global health issue, and In Vitro Fertilization (IVF) has become a common treatment option. However, the physical and psychological demands of IVF can adversely affect women's mental health and treatment outcomes. Social support has been recognized as a protective factor in managing health-related stress, but its role among women undergoing IVF remains underexplored. This study aims to examine the impact of perceived social support on the psychological wellbeing of women undergoing IVF.A total of 284 women participated in the study, including 142 women undergoing IVF treatment and 142 naturally pregnant women as a control group. Participants were selected from Telangana and Karnataka using purposive and snowball sampling techniques. Data were collected using a self-structured demographic questionnaire, the Multidimensional Scale of Perceived Social Support, and the Depression, Anxiety, and Stress Scale (DASS-21). The results revealed significantly higher levels of depression, anxiety, and stress among IVF participants compared to the control group. Additionally, IVF women reported lower levels of perceived social support. A significant negative correlation was found between perceived social support and psychological distress (depression, anxiety, and stress) among IVF participants. Furthermore, perceived social support emerged as a significant predictor of better psychological wellbeing in women undergoing IVF. These findings suggest that enhancing social support may improve mental health outcomes for IVF patients. Mental health professionals and fertility care providers should consider integrating social support strategies into treatment plans to promote psychological resilience and improve the overall experience of women undergoing infertility treatment.

**Keywords:** Social support, psychological wellbeing, invitro fertilization, infertility

**Introduction:**

Infertility refers to a “disease of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse” (World Health Organization,2020). Millions of people struggle with infertility, which impacts their families, communities, and themselves. Infertility is categorized as either primary or secondary. For women who have never given birth before, identified as primary infertility. There is at least one conception in secondary infertility, but it does not result in further conceptions. An estimated one in six individuals globally who are of reproductive age will become infertile at some point in their lives (World Health Organization,2020). The World Health Organization estimated that 80 million people worldwide suffer from infertility. In their lifetime, 10 to 15 per cent of couples experience it. The infertility prevalence high (up to 21.9%), with regard to primary infertility at 3.5 percent and secondary infertility at 18.4 percent. Infertility rates are widely acknowledged to be inaccurately estimated. Potential obstacles to determining the prevalence include suboptimal methods of measurement and unidentified forms of infertility stemming from cultural prejudices (Abadsa, A. A., and AL-Yazori, M. T., 2017).

There are numerous causes and risk factors that contribute to infertility, including mixed, infections, genetic, and unidentified factors; male factors include disruptions of the ejaculatory or testicular processes, hormonal imbalances, etc.; female factors include ovulation failure, cervical issues, structural issues with the reproductive system, and uterine problems. The prevention, diagnosis, and treatment of infertility, including the use of assisted reproductive technologies, are all included in fertility care (World Health Organization,2020).

An increasing corpus of research demonstrates that infertile women receiving IVF-ET treatment have higher than average psychological discomfort, with anxiety and depression being the most prevalent. Due to infertility itself, invasive medical procedures, exorbitant expenditures, and uncertainty regarding treatment outcomes, the experience of undergoing in vitro fertilization-embryo transfer (IVF-ET) is turning into a life crisis for some people and could be particularly detrimental for women (Wu, L *et al*., 2023).

Social support is foremost essential aspect to one’s physical and psychological wellbeing. As perceived social support comprises of acquiring and sharing knowledge, guidance, financial assistance, and emotional support from the local social network (Abadsa, A. A and AL-Yazori, M. T, 2017). Infertility is a painful experience which leads to disappointment, wrath and prostration in infertile couples than their counterparts who are fertile, therefore the social support receiving by IVF women is crucial for their treatment to be effective (Schmidt L, 2009). Therefore, this research aims to examine perceived social support and its relationship with psychological wellbeing among women undergoing IVF.

**Material and methods:**

**Participants and procedure**

A descriptive study design was conducted to investigate the potential role played by social support on women undergoing invitro fertilization and its relationship with their psychological wellbeing. A differential research design used to compare the psychological wellbeing and social support between women with IVF and natural pregnancy. At the beginning of the study total 314 sample were selected for the study, but due to incomplete filling of questionnaire and based on sample meeting the study criteria the sample size reduced to two hundred eighty-four, in which 142 women were receiving IVF treatment from infertility clinics and a matched sample of 142 women (control) with normal pregnancy were recruited through purposive and snowball sampling technique from Telangana and Karnataka states. Inclusion criteria are women undergoing in-vitro fertilization in selected study area i.e., Karnataka and Telangana, voluntary participation, women with natural pregnancy for control group and women above 20 years of age, and exclusion criteria is use of medications other than those used for infertility treatment and physical or mental disorders among women.

The data was collected through face-to-face individual interviews, telephonic interviews and also mailed google forms and questionnaires to few participants. An oral consent was obtained from each and every participant to be part of research and they were assured of confidentiality.The study also undergone ethical committee review conducted by University of Agricultural Sciences Dharwad, where the committee comprises of doctor, dietician, lawyer and psychologist.

**Measures**

**Self-structured questionnaire:** A self-structured questionnaire comprised of demographic and reproductive health status questions framed by reviewing literature. The demographic details include age of the couple, age at marriage, marriage type, education and occupation of the participants, family type and size.

**Depression, Anxiety and Stress Scale (DASS-21) by Lovibond & Lovibond (1995)**: The DASS-21 is a 21 items self-report scale employed to assess psychological health status of the participants. The scale consists of three subscales which measures stress, anxiety and depression, under each subscale seven items were present. On a four-point Likert type scale, responses were recorded. The raw scores are calculated by summing the scores for each subscale. Further obtained scores on DASS21 need to be multiplied by 2 to calculate the final score. Low scores indicate normal and higher scores indicates extremely severe.

**Multidimensional scale of perceived social support (MSPSS) by Zimet *et al*. (1988)**: The MPSS is a 12-item scale self-report measure. It assesses the social support receiving from three sources of support, namely, family, friends, and significant other. The responses were rated on seven-point scale. The scores on each item were summed. The high score indicates high perceived social support and low score points to the absence of perceived support, a scarcity of support, or deprivation of support.

**Statistical analysis**

The data was analysed by using SPSS 20 software. Frequency, means, standard deviation used for descriptive analysis of data. The t-test is used to compare two groups. The relationship between two variables evaluated through Karl Pearson correlation coefficient test and through linear regression analysis the significant predictor for psychological wellbeing was analysed. The reliability for all the measures obtained by Guttman split half test was higher than 0.76.

**Results and discussion:**

**Table 1: Socio-demographic characteristics of the study participants (N=284)**

|  |  |  |
| --- | --- | --- |
| **Socio demographic characteristics** | **IVF group** | **Control group** |
| **n** | **%** | **n** | **%** |
| **Age of the participant** |
| 25-29 | 39 | 27.46 | 41 | 28.87 |
| 30-34 | 55 | 38.73 | 57 | 40.14 |
| 35-39 | 48 | 33.80 | 44 | 30.98 |
| 40-45 | - | - | - | - |
| **Age of the spouse** |
| 30-34 | 38 | 26.76 | 39 | 27.46 |
| 35-39 | 63 | 44.36 | 61 | 42.95 |
| 40-45 | 41 | 28.87 | 42 | 29.57 |
| **Age at marriage** |
| 20-24 | 41 | 28.87 | 48 | 33.80 |
| 25-29 | 91 | 64.08 | 85 | 59.85 |
| 30-34 | 10 | 7.04 | 9 | 6.33 |
| **Type of marriage** |
| Consanguineous | 33 | 23.23 | 41 | 28.87 |
| Non consanguineous | 109 | 76.76 | 101 | 71.12 |
| **Education** |
| Professional qualification with technical degree or diplomas eg. Doctor, engineer, MBA, CA, etc. | 75 | 52.81 | 66 | 46.47 |
| Post graduation (non-technical including PhD) | 11 | 7.74 | 11 | 7.74 |
| Graduation | 56 | 39.43 | 65 | 45.77 |
| **Occupation**  |
| Service in central/state/public undertakings or Owner of a company employing >20 persons or self employed professional viz Doctors, CAs, Engineer, etc. | 31 | 21.83 | 29 | 20.42 |
| Service in private sector or independent business employing 2-20 persons | 70 | 49.29 | 65 | 45.77 |
| Service at shops, home, transport, own cultivation of land | 3 | 2.11 | 11 | 7.74 |
| Self employed eg, shops, rehdies or petty business with income >5000 | 5 | 3.52 | 11 | 7.74 |
| Self employed with income <5000 (labourer, housewife) | 33 | 23.23 | 26 | 18.30 |
| **Family type** |
| Nuclear family | 98 | 69.01 | 77 | 54.22 |
| Joint family  | 44 | 30.98 | 65 | 45.77 |
| **Family size** |
| 1-5 | 103 | 72.53 | 95 | 66.90 |
| 6-10 | 39 | 27.46 | 47 | 33.09 |

Table 1 presents socio demographic characteristics of the study participants. Most of Women undergoing IVF were in 30-34 years and (38.73%) and 35-39 years (33.80%) and the spouse age with 35-39 years (44.36%). More than fifty per cent of IVF participants (64.08%) reported their age at marriage was at 25-29 years and 76.76 per cent had non consanguineous. Majority of the IVF participants completed professional qualification with technical degree (52.81%) and mostly working at private sectors and service in central/state/public sectors (i.e., 49.29% and 21.83% respectively). In the study most of the families composed with nuclear type of family (69.01%) with a family size of 1-5 members (72.53%). With respect to control group a matched socio demographic characteristics participants were recruited, where there is no statistically significant difference between two groups.

**Table 2: Comparison of levels of perceived social support between women undergoing IVF and normal pregnancy (control) (N=284)**

|  |  |  |
| --- | --- | --- |
| **Perceived social support** | **IVF (n=142)** | **Control (n=142)** |
| Medium social support | 99 (69.72) | 86 (60.56) |
| High social support  | 43 (30.28) | 56 (39.43) |
| Total  | 142 (100) | 142 (100) |
| Mean+SD | 60.66+7.73 | 66.28+8.92 |
| t-value | -5.671\*\*\* |

Figures in parenthesis indicate percentages, \*\*\* Level of significance at <0.001

The perceived social support compared between women undergoing IVF and normal pregnancy (Table 2). A significant difference observed with respect to perceived social between women undergoing IVF and control group (t value=-5.671; p=<0.001). The higher means reveal that woman in normal pregnancy group (M=66.28; SD= 8.92) had better perceived social support than women with IVF. Women undergoing IVF mostly receiving medium social support (69.72%) and 30.28 % had high social support. Similarly, in normal pregnant (control) women majority of them had medium (60.56%) and high perceived social support (39.43%). Social support is an essential component for woman’s undergoing infertility related treatment, and may responsible for treatment failure. Social support helps individuals to feel taken care of and accepted lowers their perceived stress levels, and reduces the harmful effects of their emotions. The study shows a significant difference between women with IVF and normal pregnancy in terms of perceived social support where both the groups receiving similar levels of support. However, the level of perceived social support depends on women disclosure regarding infertility to friends, family and relatives (Schmidt L, 2009).

**Table 3: Comparison of psychological wellbeing between women undergoing IVF and normal pregnancy (N=284)**

|  |  |  |
| --- | --- | --- |
| **Psychological wellbeing** | **IVF (n=142)** | **Control (n=142)** |
| **Depression** |
| Normal | - | 121 (85.21) |
| Mild | 2 (1.40) | 12 (8.45) |
| Moderate  | 22 (15.49) | 9 (6.33) |
| Severe  | 48 (33.80) | - |
| Extremely severe | 70 (49.29) | - |
| Total | 142 (100) | 142 (100) |
| Mean+SD | 26.97+5.40 | 12.11+11.30 |
| t-value | 14.136\*\*\* |
| **Anxiety** |
| Normal | 13 (9.15) | 119 (83.80) |
| Mild | 12 (8.45) | 18 (12.67) |
| Moderate  | 59 (41.54) | 5 (3.52) |
| Severe  | 34 (23.94) | - |
| Extremely severe | 24 (16.90) | - |
| Total | 142 (100) | 142 (100) |
| Mean+SD | 15.07+5.78 | 11.21+5.53 |
| t-value | 5.742\*\*\* |
| **Stress** |
| Normal | 21 (14.78) | 106 (74.64) |
| Mild | 46 (32.39) | 21 (14.78) |
| Moderate  | 60 (42.25) | 15 (10.56) |
| Severe  | 15 (10.56) | - |
| Extremely severe | - | - |
| Total | 142 (100) | 142 (100) |
| Mean+SD | 19.01+5.49 | 14.50+6.67 |
| t-value | 6.208\*\*\* |

Figures in parenthesis indicate percentage, \*\*\* level of significance at <0.001

Table 3 presents comparison of psychological wellbeing between women IVF and normal pregnancy. A significant difference found between women with IVF and control group with respect to depression (t value=14.136; p=<0.001), anxiety (t value=5.742; p=<0.001) and stress (t value=6.208; p=<0.001), where women IVF reported high mean scores on depression (M=26.97; SD=5.40), anxiety (M=15.07; SD=5.78) and stress (M=19.01; SD=5.49) compared to women with natural pregnancy (i.e., control). Almost fifty per cent of women in IVF group reported extremely severe depression, followed by severe, moderate and mild. With respect to anxiety 41.54 per cent had moderate, 23.94 per cent had severe, 16.90 had extremely severe, 8.45 per cent had mild and only few per cent reported that they were normal (9.15 %). Most of the women with moderate (42.25), mild (32.39) and severe stress (10.56) and only 14.78 per cent were without stress.

The depression, anxiety and stress were significantly differed between women in IVF group and control group. Compared to the control group, women undergoing IVF treatment report feeling angry, scared, aggressive, embarrassed, anxious, distressed, etc. more frequently. Not only infertility condition, the financial burden, critical medical procedures, uncertainty related to treatment outcomes will worsen the psychological wellbeing of women experiencing IVF (Wu, L *et al*., 2023).

**Table 4: Correlation between social support and psychological well being of women undergoing IVF**

|  |  |
| --- | --- |
| **Social support** | **Psychological wellbeing** |
| **Depression** | **Anxiety** | **Stress** |
| Family support | -.432\*\* | -.159 NS | .121 NS |
| Friend support | -.376\*\* | -.049NS | -.275\*\* |
| Significant other support | .086 | -.297\*\* | -.075NS |
| Total social support | -.428\*\* | -.231\*\* | .144NS |

\*\*Significant at 0.01; NS indicate non-significant

Table 4 presents correlation between depression, anxiety and stress and perceived social support among women undergoing IVF. A significant negative correlation found between depression and family support (r=-.432, p=<0.01), friend support (r=-.376, p=<0.01) and total social support (r=-.428, p=<0.01). Similarly, anxiety and significant other support (r=-.297, p=<0.01) as well as total social support (r=-.231, p=<0.01) were significantly negatively correlated. Stress is also significantly and negatively correlated with friend support (r=-.275, p=<0.01). Thus, with the increase of family, friend and significant other support there is significant decrease in depression, anxiety and stress, which implies better psychological well-being.

Depression, anxiety and perceived social support were negatively significantly correlated. Women with high family, friend and total social support will result in low levels of depression. Similarly, the anxiety will be reduced by increasing total social support and significant others support. The friend support will decrease the stress among women undergoing IVF. It is believed that infertile couples who discuss their feelings, thoughts, and issues with partners, friends, family, relatives, or a counsellor experience less stress (Kaplan C, 2018). In addition, women who undergoes infertility treatment, found that the perceived family support may have a strong impact on their psychological well-being. Provision of supportive social interactions to women attending IVF treatment reduced stress levels compared to control group in an experimental study (Malina, A. *et al*., 2019).

**Table 5a. Linear regression analysis predicting variables for Depression in women undergoing IVF**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Independent****Variable**  | **Un-standard coefficients** | **Standard coefficient** | **t** | **Sig.** | **F** | **Sig.** | **R** | **R2** |
| **B** | **Std. Error** | **Beta** |
| Family support | .525 | .093 | .432 | 5.670 | .000 | 32.147 | **<0.001** | .432 | .187 |
| Friend support | .685 | .143 | .376 | 4.806 | .000 | 23.100 | **<0.001** | .376 | .142 |
| Significant others  | .148 | .144 | .086 | 1.026 | .306 | 1.054 | .306 | .086 | .007 |
| Total social support | .299 | .053 | .428 | 5.607 | .000 | 31.442 | **<0.001** | 0.428 | 0.183 |

**Table 5b. Linear regression analysis predicting variables for Anxiety in women undergoing IVF**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Independent****Variable**  | **Un-standard coefficients** | **Standard coefficient** | **t** | **Sig.** | **F** | **Sig.** | **R** | **R2** |
| **B** | **Std. Error** | **Beta** |
| Family support | -.206 | .109 | -.159 | -1.900 | .060 | 3.608 | .060 | .159 | .025 |
| Friend support | -.095 | .165 | -.049 | -.575 | .566 | .331 | .566 | .049 | .002 |
| Significant others  | -.544 | .148 | -.297 | -3.683 | .000 | 13.562 | .**000** | .297 | .088 |
| Total social support | -.173 | .062 | -.231 | -2.813 | 006 | 7.913 | **.006** | .231 | .053 |

**Table 5c. Linear regression analysis predicting variables for Stress in women undergoing IVF**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Independent****Variable**  | **Un-standard coefficients** | **Standard coefficient** | **t** | **Sig.** | **F** | **Sig.** | **R** | **R2** |
| **B** | **Std. Error** | **Beta** |
| Family support | .149 | .104 | .121 | 1.440 | .152 | 2.075 | .152 | .121 | .015 |
| Friend support | .509 | .151 | .275 | 3.383 | .001 | 11.446 | **.001** | .275 | .076 |
| Significant others  | -.131 | .146 | -.075 | -.894 | .373 | .798 | .373 | .075 | .006 |
| Total social support | .102 | .059 | .144 | 1.724 | .087 | 2.972 | .087 | .144 | .021 |

The predicting factors for psychological wellbeing among women undergoing IVF depicted in Table 5a, 5b and 5c. With respect to depression, the family support (F value=32.147; p value= <0.001), friend support (F value=23.100; p value= <0.001) and total social (F value=31.442; p value= <0.001) were the significant predicting factors. Whereas for anxiety significant others (F value=13.562; p value= .000) and total social support (F value=7.913; p value= .006) found to be a significant predicting factor. And friend support (F value=11.446; p value= 0.001) found to be significant predicting factor for stress among women attending IVF.

The perceived social support found to be significant predictor of depression and anxiety among women undergoing IVF. The results are in line with research study (Mitrović, M., et al., 2021), the social support networks had significant impact on mental health of women with IVF. In the current study, the model summary explains 18 and 53 per cent of variance of perceived social support as a predicting factor for depression and anxiety respectively among women undergoing IVF. Thus, perceived social support establishes as a protective factor for psychological wellbeing of women undergoing IVF.

**Conclusion:**

Depression, anxiety and stress were high among women undergoing IVF as the treatment associated with several physical, physiological, financial and social aspects. The study reveals the potential role of perceived social support on psychological well being of women undergoing IVF. It is recommended to provide awareness on beneficial effects of social support for channelizing feelings of distress, anger as well as sharing experience of being infertile. In addition, the mental health professionals educating the spouse, friends, and family of infertile couples about the value of social support and assisting in developing of the social network systems that these couples view as providing social support.

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Details of the AI usage are given below:

1. Quillbolt Paraphrasing v23.89.2

2.Open AI ChatGPT

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