



**PSYCHOLOGICAL DISTRESS OF INFERTILITY AND ASSISTED
REPRODUCTIVE TECHNOLOGY: PSYCHOSOCIAL MANAGEMENT
MODALITIES OF CLIENTS**

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ABSTRACT: *Infertility is the inability of couples to achieve pregnancy within one year of regular unprotected sexual intercourse. It affects around 8 to 12% of reproductive-aged couples globally, with one-third of cases caused by male issues, one-third by female issues, and one-third by a combination of both or unknown factors. Several treatment options abound and the couple may need to be managed through Assisted Reproductive Technology (ART). Infertile couples often experience psychological distress in the form of stress, anxiety and depression with a diagnosis and treatment with ART. It is therefore important to provide psychosocial support and appropriate coping strategies during infertility treatment, as couples may lack information and strategies to deal with the psychological impact. These are actions that address both the psychological and social needs of the couple. Though very important, there is limited research on the efficacy of psychological interventions for couples undergoing assisted reproductive technology (ART) treatment, particularly in Africa.*

KEYWORDS: Infertility, Psychological distress, Psychosocial support, Assisted Reproductive Technology.



INTRODUCTION

Infertility is a vital issue for couples of childbearing age worldwide. It is a special reproductive health defect that is not life-threatening but has a considerable, detrimental influence on couples, their families and society. It is the inability of a couple to achieve conception over a period of one year without contraception (in a woman under 35 years of age or 6 months in a woman above 35 years of age) despite adequate, regular (3-4 times per week) and unprotected sexual intercourse (Tiagha et al., 2020). The World Health Organization has ranked infertility in both men and women as a public health issue because it affects millions of people (WHO, 2020). Global estimates suggest that between 48 million couples and 186 million individuals live with infertility (WHO, 2020; Wasilewski et al., 2020). Sometimes, the terms infertility and subfertility are used interchangeably. Sources from the literature posited that infertility affects approximately 8-12% of couples globally (Wasilewski et al., 2020; Ma et al., 2021; Agrswal et al., 2021; Marca, & Serdarogullari, 2020). Infertility affects one in every four couples in developing countries (WHO, 2020). The problem affects up to 15% of couples in the United States of America. In Nigeria and parts of Sub-Saharan Africa (SSA), including Cameroon, the infertility rate could exceed 30% and hence constitute a major public health problem (Tiagha, 2020). Infertility constitutes 24-59% of gynecological consultations in Nigeria (Bello et al., 2021). Infertility has often been described as a silent struggle, and couples trying to conceive report feelings of depression, anxiety, isolation, and loss of control (Rooney & Domar, 2018). Various psychosocial interventions can be used, such as cognitive behaviour therapy, acceptance and commitment therapy, mind and body intervention, and educational intervention. This review will explore the effectiveness of these interventions (Bach, 2018; Abdolahi et al., 2019; Halder & Chakraborty 2023; Kheirkhah et al., 2023; Levran et al., 2019; Emokpae & Imaobon, 2021).

Several studies have suggested interventional studies to reduce stress, anxiety and depression among couples receiving assisted reproductive technology. Despite the high agreement on the necessity of counseling couples undergoing ART, there is a paucity of studies addressing the efficacy of psychological interventions among clients undergoing treatment with ART. The impact of infertility on Nigerian couples can be devastating and can often manifest as psychosocial morbidities (Obajimi et al., 2019). This review is therefore based on the influence of psychosocial support strategies in reducing distress among clients diagnosed with infertility and on treatment with ART.

Types and Causes of Infertility

Various factors and medical conditions can contribute to fertility problems, and an individual case may have a single cause, several causes, or in some cases no identifiable cause. Overall, one-third of infertility cases are caused by male reproductive issues, one-third by female reproductive issues, and one-third by both male and female reproductive issues or by unknown factors (Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2021).

Primary infertility is the inability to achieve a clinical pregnancy after 12 months of regular unprotected sexual intercourse, while secondary infertility refers to infertility that occurs after a prior successful conception. The conception may have resulted in a miscarriage, stillbirth or successful birth (Salie et al., 2020). Magdum et al. (2022) identified several pathophysiological determinants of infertility in females. They include endocrine dysfunction, sexually transmitted



diseases (STD), congenital anomalies, autoimmune diseases, etc. Indirect causes of infertility also include anaemia, malnutrition, poverty, lifestyle, stress, postponing parenthood, and obesity. Mustapha et al. (2019) also identified the most common causes of female infertility as ovulatory dysfunction (age or non-age related), fallopian tube abnormalities (related to pelvic adhesions and infection), endometriosis, uterine abnormalities (congenital or acquired), and cervical factors. On the other hand, identified male causes include infections or inflammatory conditions (mumps virus after puberty), hormone or pituitary gland problems, immune problems in which the man makes antibodies against his own sperm, environmental and lifestyle factors (tobacco use, heavy alcohol use, use of marijuana or steroids, or exposure to toxins) and genetic diseases, such as cystic fibrosis. Other causes include structural problems (blockage of the genital tract that stops the flow of semen), genetic or birth defects, erectile dysfunction or premature ejaculation. Liver or kidney disease, or treatment for seizure disorders can all cause infertility.

Fecundability

Fecundability in human reproductive studies refers to a woman's likelihood of conceiving within a specific time period (Sarka & Islam, 2018). It represents the physiological capacity to produce viable offspring. Natural fecundability is assumed to increase gradually from age 12 to 20, remain constant from 20 to 30, and decline linearly to zero at age 48. Male partner age also affects fertility rates. Reproductive potential in both men and women depends on successful gamete production (Anderson & Reynold-Wright, 2020; Sarka & Islam, 2018). Women's fecundability is linked to the release of a single egg each month, while male fertility relies on the continuous production of motile spermatozoa. Fecundity represents an individual's maximum potential for reproduction, while fertility refers to natural capacity. Infertility assessments focus on ovulation, spermatogenesis, and fallopian tube patency. Evaluation of ovulation includes measuring ovarian reserve and analyzing ejaculate. Impaired fecundity can lead to delayed conception or diagnosed infertility (Larknar, 2018; Hipwell et al., 2019).

Assisted Reproductive Technology

In situations when it becomes difficult for individuals to achieve pregnancy, various options abound in ameliorating this in both male and female partners. Shreffler et al. (2020) opined that there are many medical treatments and non-medical alternatives for infertility. Couples can be helped to make decisions about treatment, communicate better as a couple about issues surrounding infertility, and cope with potentially traumatic experiences related to infertility processes. There are available drugs for the treatment of male and female infertility. Various surgical procedures also abound for the couple depending on the diagnosis. Artificial reproductive technology may be the last option if other medical and non-medical procedures do not solve the problem of infertility. Kopca and Tulay (2021) noted that assisted reproductive technology (ART) is a broad field in infertility that encompasses different types of treatments. These revolutionary treatment methods aim to aid infertile or subfertile couples. Treatment was expanded exponentially, as 1 to 3% of births worldwide take place through ART procedures. American Society for Reproductive Medicine (2018) identified various forms of ART, such as in vitro fertilisation (IVF), gamete intrafallopian transfer (GIFT), zygote intrafallopian transfer (ZIFT), surrogacy/gestational carrier, etc.



Since the first baby with Assisted Reproductive Technology (ART) was conceived in 1978, the use of advanced technologies to overcome infertility has increased steadily (Silva et al., 2018). Okafor et al. (2017) noted that it is estimated that approximately 3.5 to 5 million children have been born worldwide following ART treatment. Children conceived by ART comprise as many as 5.9% of total births in Denmark, 4.2% in Israel, 3.3% in Australia, 1.6% in the United States, 1.5% in Japan, and 1.7-2.2% in the largest European countries. In 2014, in the United States, ART procedures resulted in 56,028 live-birth deliveries and 68,782 infants, representing 1.6% of births for that year (Silva et al., 2018). There are no accurate figures or proper documentation of success rates in many African countries, but in Nigeria, IVF has changed the prospect of thousands of married couples that were unable to have children (Okafor et al., 2017). Infertility remains a significant social problem and a challenge for healthcare systems worldwide. As the number of infertile couples deciding to undergo ART treatment is increasing, more attention is being paid to the negative consequences of stress related to infertility and invasive reproductive procedures. It has been shown that a higher proportion of couples with infertility reside in low- and middle-income countries, particularly in sub-Saharan Africa. The prevalence of infertility in sub-Saharan Africa is higher, with 10-30% of couples affected in Nigeria (Polis et al., 2020).

Influence of Psychological Distress on Infertility Treatment

Evidence has shown that psychological symptoms and negative emotions, such as stress, anxiety and depression further reduce a couple's ability to conceive a child (Rooney, 2018; Dadhwal et al., 2021). Studies have also shown that couples undergoing in vitro fertilisation (IVF) treatment that experience higher levels of stress documented by increased levels of salivary alpha-amylase, have a higher risk of pregnancy failure and men have lower sperm density, motility and viability. Dopamine, epinephrine, and norepinephrine are compounds that may affect blood flow to important reproductive organs. The catecholamines are also what trigger the secretion of the alpha-amylase. Increased concentration of hair cortisol, which is an indicator of chronic stress, has also been associated with the success rate of ART treatment (Santa-Cruz et al., 2020; Rooney et al., 2022; Aribra & Osadolor, 2020). The ability to reproduce has become a growing problem for many couples trying to conceive a child; although not all couples choose to seek medical assistance, more than 10% of the childbearing population has resorted to assisted reproductive technology (ART) to conceive. Not being able to have a child and going through various ART procedures subject the couple to stress, and childlessness is often perceived as a life crisis where the emotional strain equals that found for traumatic events. Infertility experiences in women have been a major cause of anxiety, poor quality of life, and employment of maladaptive coping. Women therefore need supportive relationships with the family and spouses (Dadhwal et al., 2021). It has been shown that infertile couples go to seek in-vitro fertilisation (IVF) treatment in recent times and this will continue to increase (Qiu et al., 2019; Casale, 2022). However, only a quarter of women will get pregnant after a single IVF cycle, so most couples will experience negative pregnancy results and repeat treatment (Liu et al., 2021; Bello et al., 2021). Rates of stress, anxiety and depression are increased among patients with infertility (Gleason et al., 2020) and this may be further escalated in patients undergoing ART treatment than in the general population (Luca et al., 2021). If the level of infertility-related stress is higher, the IVF success rate is lower (Aimagambetova et al., 2020).



Types of Psychological/Social Interventions

Bach (2018) identified four types of psychosocial interventions for individuals with infertility. They are cognitive behaviour therapy (CBT), acceptance and commitment therapy, mind and body interventions and educational interventions.

(i) Cognitive Behavioral Treatment (CBT): This is a psychotherapeutic method that combines basic behavioural and cognitive treatment in the alleviation of stress and anxiety (Abdolahi et al., 2019). This treatment has led to positive consequences by improving coping capacities and reducing the effect of psychological pain which may have resulted in certain circumstances the client had gone through or is going through. It is believed that CBT is an effective treatment for different psychological distress; however, in the field of infertility, few studies have assessed the success of this type of psychosocial intervention. In a study on the effect of cognitive behavioral therapy on anxiety and depression in Iranian infertile women, six clinical trials with 321 infertile women entered the systematic review. Findings from the meta-analysis of six studies revealed that the mean depression and anxiety score in the CBT group was lower than the routine care group, which was significant only for anxiety. Therefore, it was concluded that CBT is an effective intervention in reducing anxiety and depression especially among women (Golshani et al., 2020).

In a study by Halder and Chakraborty (2023), the study showed that infertility leads to emotional turmoil and distress and this becomes a silent struggle. There is usually a sense of hopelessness and helplessness. They found that cognitive behavioral therapy (CBT) changes negative thoughts and beliefs related to infertility and reshapes maladaptive behavioral patterns in the situation. It also improves the coping strategies to deal with difficult situations and improves planning toward future implications and treatment.

In another study by Kheirkhah et al. (2023) on preliminary examination of acceptability, feasibility, and effectiveness of internet-based cognitive behavioral therapy for the treatment of depression and anxiety in infertile women. For the CBT group, depression scores of women improved significantly from the pre- to post-trial stages. The study also found no significant differences in depression scores of the participants between the pre-trial and the mid-trial. Anxiety scores of women improved significantly from pre- to post-trial stages (the mean differences). However, no significant differences were observed in their depression scores between the pre-trial stage and the mid-trial. In a study of the clinical efficacy of CBT on the pregnancy rate of patients receiving IVF-ET, the result of a meta-analysis of 10 studies with 1520 participants showed that the pregnancy rate was significantly higher in the intervention group than in the control group. The evidence showed that CBT and cognitive-related therapies alleviate emotional burdens, such as stress/distress and anxiety, thus improving pregnancy outcomes in women undergoing IVF-ET treatment (Li et al., 2021).

Golshani et al. (2021) found in a controlled randomized clinical trial that was conducted on 56 pregnant women with a history of primary infertility that CBT counseling can affect the perceived stress, anxiety, and quality of life of pregnant women with a history of primary infertility. Also, a study by Karaca et al. (2019) to determine the effect of a cognitive behavioral group therapy (CBT) program administered to infertile women on infertility-related stress, depressive and anxious thoughts, and general health state found that CBGT was effective in reducing the negative feeling and emotions in the experimental group. Another study by Kheirkhah et al. (2023) found the acceptability, feasibility, and effectiveness of Internet



Cognitive Based Therapy (ICBT) and CBT programme for the treatment of depression or anxiety in infertile women effective. Marashi et al. (2021) showed improved self-reliance and self-acceptance in infertile women when they had CBT.

(ii) Acceptance and Commitment Therapy (ACT): This is a psychotherapy technique that promotes accepting negative thoughts, feelings, and events. It also encourages a person to mindfully participate in activities that uphold their core beliefs and values (Fletcher, 2022). In a study conducted by Hosseinpanahi et al. (2020), it was found that counseling has been helpful in improving mental health and fertility quality of life of infertile couples. It was reported that anxiety and depression were higher in the female spouse than in her husband before the treatment. Elahe et al., my (2018) found that infertile women learned that they can enjoy their lives and have meaningful lives despite problems of infertility and its treatment. There was a reduction in anxiety it seems with this way, reduced their anxiety and the group acceptance commitment therapy was seen as a non-pharmacological and low-cost effective method in reducing infertile women's anxiety. Haji-Adineh et al. (2019) posited that ACT can reduce the distress suffered by women going through infertility thus improving psychological optimism and well-being among them through intellectual acceptance, cognitive impairment, and the pursuit of value-driven behaviours. Koohikamal et al. (2021) in their study noted that acceptance and commitment therapy can improve the quality of life of infertile women, and using this intervention can be effective in reducing psychological damage caused by infertility. Hasanzadeh et al. (2019) argued that the ACT therapy in the post-test stage had a significant effect on psychological well-being including self-acceptance, positive relationships with others, autonomy, purposeful life and sexual function. It can therefore be said that ACT therapy has an effective role in promoting the psychological well-being and sexual function of women with a history of infertility. Zoherehvandi et al. (2019) found ACT useful and recommended that therapists and counselors involved in the treatment of clients with infertility use this strategy to reduce the needs and psychological problems of infertile women undergoing IVF treatment. In addition, ACT is effective and stress and depression in infertile couples, as such intervention resulted in decreased levels of stress and depression. The study concluded that the use of ACT relying on mental techniques, self-observation, cognitive fault techniques, value clarification and committed action can be an effective treatment to reduce stress and depression in infertile couples (Starabadi et al., 2020).

iii. Mind and Body Interventions

Mind and body interventions are therapeutic approaches that focus on harnessing the power of the mind to bring about change in the body or achieve the reduction of symptoms of disease or disorder. The techniques used include relaxation training (e.g., autogenic training, progressive relaxation), meditation, prayer, and creative arts therapy (APA Dictionary of Psychology, 2023). Several studies have shown the effectiveness of this technique in ameliorating various psychological distress. A systematic review of the literature revealed that participants who had mind-body interventions had reduced anxiety traits and depression scores though the reduction was of low or moderate amplitude in most studies (Gaitzsch, et al. 2020). Katyal et al. (2021) also found that psychosocial body-mind interventions with a minimum duration of 15 days resulted in a positive association between pregnancy rate in infertile and couples in ART treatment particularly long-duration interventions.

Furthermore, an internet-based intervention to test its acceptability and effectiveness with women experiencing infertility showed satisfaction and intervention adherence. Results also



suggested improvements may occur in distress ratings and pregnancy rates for women experiencing infertility (Clifton et al., 2020). According to the findings of Li et al. (2018) awareness, control over life and acceptance may be potential mechanisms that lead to improved infertility-related Quality of Life (QoL) in women following mind and body intervention programme. This ultimately improves the treatment's effectiveness. Mindfulness appears to be a protective individual characteristic of infertile women, and self-regulation, autonomy and acceptance may be implicated in the effects of mindfulness on specific aspects of FertiQoL (Li et al., 2019).

iv. Educational Intervention

Educational intervention in infertility treatment with assisted reproductive technology (ART) refers to the provision of educational programs, resources, and support to individuals and couples undergoing ART procedures. The aim is to enhance their knowledge, understanding, and decision-making abilities regarding infertility treatment options, procedures, and associated psychological and emotional challenges. Educational interventions can be delivered through various formats, such as individual counseling, group workshops, online platforms, or written materials. Educating patients about the treatment process, medication administration, and lifestyle modifications can improve treatment adherence, leading to better treatment outcomes. Patients who receive educational interventions have reported higher levels of satisfaction with their treatment experience, feeling more empowered and involved in the decision-making process (Levran et al., 2019).

Emokpae and Imaobon (2021) suggested more reproductive health education which is necessary to create awareness of the etiologies of infertility and the importance of *in vitro* fertilization treatment as a means of conceiving. In a study on the effectiveness of group educational counselling by Hamzehgardeshi et al. (2019), the results showed that one of the effective methods for reducing the perceived stress in women undergoing assisted reproductive treatment is educational group counseling.

The Implication to Nursing Practice

Allan et al. (2018) found that the needs of infertile couples for preconception care are often overlooked. Nurses have the opportunity to identify and address these needs during infertility investigations and assisted conception planning. Mind (2019) highlighted the signs of stress and distress experienced by infertile women, including irritability, anxiety, poor appetite, and restlessness. Nurses working in fertility centers should recognize and manage these signs during the fertility treatment process. The Royal College of Nursing (2020) emphasized the importance of psychosocial support in fertility care and provided guidelines for nurses to recognize stress in women, including sleep patterns, decision-making ability, and interactions with family and friends.

Zaidouni (2020) identified various needs of infertile couples undergoing infertility treatment and assisted reproductive technology (ART), such as social support, financial support, spiritual support, informational support, and emotional support. Meeting these needs through couple-centered approaches can improve their quality of life and treatment outcomes. Naab et al. (2019) highlighted the social impacts faced by infertile individuals, including feelings of inferiority, social exclusion, marital conflicts, and pressure for a second marriage. Psychosocial



support, including emotional, financial, spiritual, and informational support, is crucial in addressing these impacts.

Gehan et al. (2020) conducted a study on coping strategies of infertile couples and found that implementing nursing guidelines resulted in significant improvements in positive coping for both wives and husbands. Group therapy was particularly effective in enhancing cognitive-oriented approaches and meaningful responses to stressful events.

CONCLUSION

In conclusion, there is a need for nurses to identify and address the preconception care needs of infertile couples. They should be aware of the signs of psychological distress experienced by clients with infertility and provide appropriate support throughout the fertility treatment process. Psychosocial support, including emotional, financial, spiritual, and informational support, is crucial in improving the quality of life and treatment outcomes for infertile couples. The use of appropriate psychosocial support strategies in individual and group therapy can be beneficial in enhancing coping strategies as well as addressing the psychosocial impact of infertility and ART treatment.

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