ANXIETY, DEPRESSION AND QUALITY OF LIFE AMONG WOMEN WITH PRIMARY INFERTILITY

1Roselyn Lasuh, 2Diana David and 3TK Aleyamma

1Department of Obstetrics and Gynaecology Nursing, College of Nursing, Christian Medical College, Vellore, Tamil Nadu
2Professor, Department of Obstetrics and Gynaecology Nursing, College of Nursing, Christian Medical College, Vellore Tamil Nadu,
3Professor and Head of Department, Reproductive Medicine Unit, Christian Medical College, Vellore, Tamil Nadu

ARTICLE INFO

Article History:
Received 10th February, 2020
Received in revised form 2nd March, 2020
Accepted 26th April, 2020
Published online 28th May, 2020

Key Words:
Primary infertility, Anxiety, Depression and Quality of life.

ABSTRACT

Background: Infertility is a major life crisis and represents a myriad complex of physical, spiritual, emotional and sexual dysfunction that affects all areas of a woman’s health and well being. Infertility affects how individuals feel about themselves, their relationships and their perspective on life and since the primary goal of infertility treatment is to achieve pregnancy, mental health is often neglected, and thus warrants a need for exploring their overall wellbeing.

Objectives: The objective of the study was to assess anxiety, depression and quality of life among primary infertility woman and their relationship in the Reproductive Medicine Unit of CMC, Vellore

Methodology: A descriptive correlational study design was used to assess the anxiety, depression and quality of life among primary infertility woman. A total of 70 subjects were selected by convenience sampling method. Anxiety, depression and quality of life were assessed using standardized self-administered questionnaires.

Results: The mean Beck anxiety score was 13.3± 10.8 out of which 22(31.43%) had minimal levels of anxiety, 26 (37.14%) had mild anxiety, 16(22.86%) had moderate anxiety and 6(8.57%) had severe anxiety. The mean score for depression in the present study was 15.20±9.8 out of which 42(60%) of the study participants with Primary infertility had no depression, 19(27.14%) had mild depression, 6(8.57%) had moderate depression and 3(4.29%) of the study participants had severe depression. The mean quality of life score among the study participants was 65.5±16.5.Majority of the women had a good quality of life 30(42.9%), 15(21.4%) had high quality of life, 19(27.1%) had moderate quality of life and only 6(8.6%) had poor quality of life. There was a negative correlation between anxiety and depression with quality of life and a positive correlation between anxiety and depression.

Conclusion: The study showed that anxiety and depression prevails among women with primary infertility which affects their overall quality of life.

INTRODUCTION

“Janie and Johnny sitting under a tree, first comes love, then comes marriage, then comes Janie with a baby carriage”. This familiar little childhood rhyme may symbolize the way most women believe their lives will unfold. The usual expectation of life events includes education, career, finding a mate, and then creating a family by becoming pregnant and giving birth to a perfect child. Unfortunately for many of the reproductive age population, those expectations are not realized, because these women are diagnosed with infertility (Mosher & Pratt, 2010). Globally, the rates of infertility rate are estimated to be at least 15% (186 million) in women of childbearing age (WHO, 2012), with at least 40.5 million women seeking treatment (Inhorn, 2013).This increase is associated with numerous factors such as the change in traditional roles or late marriage, individual future careers and couple plans for children. Infertility on the whole is divided into primary and secondary
where definitions vary between studies, but the operational definition, by WHO, defines primary infertility as the “inability to conceive within two years of exposure to pregnancy (i.e. sexually active, non-contraception, non-lactating) among women 15-49 year old, and Secondary infertility is referred to the inability to conceive following a previous pregnancy.

According to Adamson et al.,(2011) India has an overall prevalence of primary infertility between 13.9 and 26%, and the average age of the women experiencing primary Infertility was 25.9 years with a range of 16-30 years.

Having children is viewed in most cultures as a rite of passage into adulthood, an important part of status and even a source of financial security for aging parents (Aarts et al., 2011).

Although infertility is usually linked to a physical problem, the stress and loss associated with infertility can have serious impact on psychological, physical, economic, and social well-being, and thus the quality of life in general (Pinar & Zeyneloglu, 2012).

The effects of infertility on individual’s emotions are complicated and these effects vary based on the duration of infertility, attitude, self-esteem, individual’s capacities for adaptation, reasons and prognosis of infertility, and emotional and social support systems. It is estimated that almost 86.8% of infertile women have anxiety and 40.8% have depression (Erdem & Apay, 2014).

Also, individuals who experience infertility have been reported to be more anxious and emotionally distressed than people in the general population. They also experience stigma and isolation and can threaten a woman’s identity, status and economic security and consequently, be a major source of anxiety leading to lowered self-esteem and a sense of powerlessness and poor quality of life (Aarts et al., 2011).

The inability to conceive children will make the couples to seek medical help and finally will receive treatment for infertility which does not warrant complete certainty of a successful pregnancy, as causes of infertility are multifactorial. Advances in assisted reproductive technologies, such as intravitrofertilization, intrauterine insemination and intracytoplasmic sperm injection, can offer hope to many women or couples where treatment is available, although barriers exist in terms of medical coverage, affordability, success rates and their own moral issues. Treatment for infertility or assisted reproduction is very expensive and the financial burdens on couples can be large, and adding to this is the emotional and physical consequences of experiencing infertility.

Significance and Need for the Study

Although recent improvements in the use of medications and assisted reproductive technology make pregnancy possible, for more than one half of the couples pursuing treatment, infertility is more than a medical condition. Infertility affects how individuals feel about themselves, their relationships and their perspective on life (Hart, 2002). According to a study in Mumbai, “She is called waanj (barren). There is a superstition that if she touches a baby, the baby will die” (Malpani, 2005). In another study done by Hollos and Larsen (2011) childless women in Northern Tanzania were stigmatized, and were called names such as "gumba" and "tsa" and had little respect in the community. This research shows that regardless of the medical causes of infertility, in most of these cultures women suffered personal grief and frustration and were subjected to social stigma, ostracism and, often, serious economic deprivation. They receive the major blame for reproductive mishaps even though the cause of infertility does not lie in her, and in many places infertility becomes a ground for divorce, causing a woman to lose access to livelihood.

Psychological impact of infertility is often overlooked; women may experience depressive symptoms and more distress than their spouses that can contribute to poor quality of life. Martins, Peterson, Almeida and Costa (2011) revealed that social support can be a critical component of how a woman adjusts to infertility. Health professionals should explore the quality of social networks these women possess, and encourage them to seek positive support from family, partners and close friends to enhance their quality of life.

A major concern of women with infertility is that, health care providers do not understand what they are experiencing (Hart, 2002). Infertility creates issues of guilt, anxiety, tension within the relationship, and feelings of depression and isolation. There is little discussion of the needs of infertile women in the literature, and from a clinical perspective there is still a gap in meeting their needs.

In our society, we often hear the success stories of reproductive medicines, but what goes behind the scenes, only the women who underwent the process can relate as we do not hear about the associated pain and emotional distress that infertile women go through to achieve every possible means to attain a successful pregnancy. Therefore it is critical to have a basic understanding of the challenges these women face in their day to day life as they struggle to fit in with the rest of the women their own kind.

Nurses have a major role in the diagnosis and treatment of infertility (Akyuz & Inanc, 2009). In addition to assisting in the process of diagnosis and treatment, they can take on an important role in providing emotional support by providing counselling and supportive psychotherapy, and presume a multi-faceted role. The goal of nursing care is to assess the physical, psychological and social circumstances to identify their problems and needs in these areas, and to provide appropriate care. Several studies have also reported a decrease in the level of depression, anxiety, mental distress, marital violence, and increased rate of pregnancy following psychosocial interventions. (Erdem & Apay, 2014).

Facilitating access to trained nurse counsellors is one way in which nurses can assist women and families throughout the competences at each stage of the treatment process i.e. referral, investigation, diagnosis and treatment and thereby enabling nurses to be efficient in caring for patients experiencing infertility. (Aarts et al., 2011).

In Christian Medical College, Vellore, Reproductive Medicine Unit offers a comprehensive range of investigations and treatments for couples presenting with infertility problems. The average number of outpatients visiting the clinic per month is 80-120 according to the hospital’s statistics, which is an enormous number, considering the fact that they come to seek 38657 | Page
treatment for infertility problems, and as such, the investigator felt the need that all nurses who work in this field need suitable information to guide and counsel women with infertility, by way of patient-centred holistic approach, thereby appraising their physical, social, psychological and environmental problems associated with infertility as well. Hence this study aims at evaluating the anxiety and depression that women might experience due to infertility and the extent to which it affects their quality of life.

Problem Statement
A descriptive study to assess the relationship between anxiety, depression and quality of life among women with primary infertility attending the Reproductive Medicine Unit of Christian Medical College, Vellore.

Objectives
- To assess anxiety, depression and the quality of life among women with primary infertility.
- To identify the mutual relationship between anxiety, depression and quality of life among women with primary infertility.
- To identify the association between anxiety, depression and quality of life with selected demographic and clinical variables.

Hypotheses
- H1: There is a mutual relationship between anxiety, depression and quality of life among women with primary infertility.
- H2: There is a significant association between anxiety, depression and quality of life with selected demographic and clinical variables.

Operational Definitions
Anxiety
In this study anxiety refers to feelings of nervousness, fear of losing control, fear of worst happenings and inability to relax, as measured by Beck’s Anxiety Inventory.

Depression
It refers to feelings of failure, self-dislike, indecisiveness, loss of interest in activities and suicidal thoughts or wishes by women with primary infertility as measured by Beck’s Depression Inventory.

Quality of life
Quality of life in this study refers to a woman’s perception of their position in life in the context of emotional, mind-body, relational and social domains, assessed by using the FertiQoL questionnaire.

Women with primary Infertility
Women with primary Infertility in this study refers to married women with failure to conceive a pregnancy who have come to seek treatment in the Reproductive medicine unit of CMC, Vellore

Socio-demographic variables
In this study Socio-demographic variables refers to the Age, religion, place of residence, educational status, type of family, occupation and monthly income of the women with primary infertility.

Clinical variables
In this study, Clinical variables refer to the women’s duration of infertility, etiology of infertility, previous treatment and number of times of treatment.

Assumptions
- Quality of life among women with primary infertility is poor.
- Anxiety and depression among women with infertility are influenced by their clinical and socio-demographic variables.
- Quality of life among women with primary infertility is influenced by anxiety, depression and selected demographic and clinical variables.

Projected Outcomes
- The findings of the study will contribute to the much needed information regarding anxiety, depression and quality of life among women with infertility.
- The results will provide nurses and other health care professionals an insight on the needs of women with primary infertility.
- Nurses working in Reproductive medicine unit can utilize the knowledge available through this study to provide holistic and patient-centered care.
- The information generated through this study will help nurses to be competent in appraising women with infertility through sensitive ways of approaching and communicating with them.
- The findings generated through this study will point towards the need for developing models of counselling and support that stimulate self-reflection and strengthen personal resources and empowerment for women experiencing primary infertility.

Review of literature
Literature review provides an overview of existing evidence. It is a critical summary of research on a topic of interest, often prepared to put a research problem in context (Polit & Becker, 2012). A thorough literature review provides a foundation upon which a new knowledge can be based upon and serve as the connecting link between the findings of the previous research that has been done in the problem area and the results of the proposed study.

The literature review for the study is presented under the following headings
- Infertility
- Anxiety, depression and infertility
- Quality of life and infertility
- Relationship between Anxiety, depression and quality of life in infertility
Infertility

Clinical definition of infertility

Infertility is a “disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected social intercourse” (WHO, 2013)

Demographic definition of infertility

An inability of those of reproductive age (15-49 years) to become or remain pregnant within five years of exposure to pregnancy.

Primary infertility

When a woman is unable to bear a child, either due to the inability to become pregnant or the inability to carry a pregnancy to a live birth she would be classified as having primary infertility. Thus, women whose pregnancy spontaneously miscarries, or whose pregnancy results in a still born child, without ever having had a live birth would present with primarily infertility. (Trends in prevalence, WHO, 2014)

Prevalence of Infertility

Global rates of infertility have remained relatively stable between 1990 and 2010, according to a study that compiled data from 277 National surveys in 190 countries. Research by the WHO estimated that in 2010, 48.5 million couples worldwide were unable to have a child. They found out that 1.9% of women aged 20-44 who wanted a child were unable to have their first live birth and 10.5% of women who had previously given birth were unable to have another baby after five years of trying. In the year 2012 WHO reported that the rate of infertility is estimated to be at least 15 % (186 million) in women of childbearing age globally. In a study done by Pinar and Zeyneloglu (2012) they reported that worldwide, in 55-75% cases the problem is primary infertility with the rate of secondary infertility at about 25-40%

A study done by Saoji Ajeet Vasant (2014) reported that globally 60-80 million couples suffer from infertility every year, of which probably between 15-20 million (25%) are in India alone. As per study published at the end of 2012 by World Health Organization, one in every four couples in developing countries had been found to be affected by infertility. The magnitude of the problem calls for urgent action, particularly when in the majority of cases the infertility is avoidable.

Risk factors of Infertility

There are many established risk factors associated with primary infertility. The significant risk factors for primary infertility among women include age at marriage > 25 years, unhealthy weight gain can negatively impact the reproductive system, leading to difficulties in conceiving, as such, obesity proved to be significantly associated with primary infertility, higher education, Postponement of child bearing for ≥1 year, Polycystic ovarian syndrome (PCOS) ,Menstrual irregularities in the form of any deviation from normality like, oligomenorrhea, hypomenorrhea or hypermenorrhea, Sexually transmitted infections or its sequelae, as tubal fibrosis and obstruction extensively occurred in such cases, Infection with herpes simplex virus, gynaecological factor like failure of ovulation, tubal damage and endometriosis was also significantly reported as risk factors for primary infertility (Saoji Ajeet Vasant, 2014).

According to Pinar and Zeyneloglu (2012), 40% of infertility is attributed to female factors while for another 40% male factors appear to be the cause of infertility .The remaining 20% is attributed to both partners, while 10% of this 20% is not attributable to either partner. This type of infertility is called "unexplained" infertility.

Treatment of infertility is expensive, especially in developing countries and identifying the risk factors can be of great help to prevent infertility in many females. Efforts are needed to raise awareness of the causes and consequences of this condition. (Saoji Ajeet Vasant, 2014)

Treatment for infertility

Once a woman is diagnosed with infertility, the overall likelihood for successful treatment is 50%. Fertility treatments for women fall into the following categories:

Medication treatments for female Infertility

Clomiphene or Clomiphene Citrate

Clomiphene is a medication patients take by mouth (orally). It causes the body to make more of the hormones that cause the eggs to mature in the ovaries. If a woman does not become pregnant after taking clomiphene for six menstrual cycles, a health care provider may prescribe other fertility treatments.

Gonadotropins and Human Chorionic Gonadotropin (HCG)

Gonadotropins are hormones that are injected in a woman to directly stimulate eggs to grow in the ovaries, leading to ovulation. Health care providers normally prescribe gonadotropins when a woman does not respond to clomiphene or to stimulate follicle growth for ART.

Bromocriptine or Cabergoline

Bromocriptine and Cabergoline are pills taken orally to treat abnormally high levels of the hormone prolactin, which can stop ovulation. Certain medications, kidney disease, and thyroid disease can cause high levels of prolactin.

Surgical Treatments for Female Infertility

If disease of the fallopian tubes is the cause of infertility, surgery can repair the tubes or remove blockages in the tubes. Success rates of these types of surgery, however, are low. These surgeries involving the fallopian tubes also increase the risk of ectopic pregnancy, which is a pregnancy that occurs outside of the uterus. Ectopic pregnancies are also called "tubal pregnancies" because they most often occur in a fallopian tube.

Assisted Reproductive Technology (ART)

If a woman does not become pregnant after treatment with medical and surgical techniques, she may choose to undergo more complex procedures, called ART, after consulting with her health care provider.

These include

Intrauterine Insemination (IUI)

Intrauterine insemination (IUI) is the placement of a man's sperm into a woman's uterus using a long, narrow tube. IUI can
be used in combination with medications that stimulate ovulation; this combination can increase the chance of pregnancy in some cases. The success of IUI depends on the cause of the couple’s infertility. If inseminations are performed monthly with fresh or frozen sperm, success rates can be as high as 20% per cycle depending on whether fertility medications are used, the age of the female partner, and the infertility diagnosis, as well as on other factors that could affect the success of the cycle.

**In Vitro Fertilization**

During In vitro fertilization (IVF), eggs and sperm are taken from the couple and are incubated together in a dish in a laboratory to produce an embryo. A health care provider places the embryo into the woman’s uterus, where it may implant and result in a successful pregnancy.

**Third Party Assisted ART (ASSISTED REPRODUCTIVE TECHNOLOGY)**

When couples do not achieve pregnancy from infertility treatments or traditional ART, they may choose to use a third party assisted ART method to have a child. Assistance can consist of:

- **Sperm Donation:** Couples can use donated sperm when a man does not produce sperm or produces very low numbers of sperm, or if he has a genetic disease. Donated sperm can be used with intrauterine insemination or with IVF.

- **Egg Donation:** This can be used when a woman does not produce healthy eggs that can be fertilized. An egg donor undergoes ovary stimulation and egg retrieval steps of IVF. The donated egg can then be fertilized by sperm from the woman's partner, and the resulting embryo is placed into the woman's uterus.

- **Surrogates and Gestational Carriers**

  If a woman is unable to carry a pregnancy to term, she and her partner may choose a surrogate or gestational carrier. A surrogate is a woman inseminated with sperm from the male partner of the couple. The resulting child will be biologically related to the surrogate and to the male partner. Surrogacy can be used when the female of the couple does not produce healthy eggs that can be fertilized.

  In contrast, a gestational carrier is implanted with an embryo that is not biologically related to her. This alternative can be used when a woman produces healthy eggs but is unable to carry a pregnancy to term. If needed, egg or sperm donation can be used in this situation. (National Institute of Child Health and Human Development, 2013)

- **Anxiety, Depression and Infertility**

  Many studies have reported that anxiety and depression are highly prevalent among infertility women and it can be contributed to a great extent by their socio-demographic and clinical factors as well. Women with infertility problems have severe level of anxiety (Olive, Sekar, and Süsila, 2014). The infertile women are also more anxious, more depressed and more emotionally unstable than the fertile women. Symptoms such as insomnia, appetite loss and somatic conditions of fatigue and pain are also high for infertile women. (Hassanin, Rahim and Shahin, 2010). Infertile couples with repeated failure to achieve pregnancy may feel more depressed in the middle phase, whereas in the early phase the hope for pregnancy is still high and emotional compensatory mechanisms and social adjustments make the phase less painful.

  According to Fava and Sonino (2000) women who underwent unsuccessful infertility treatments often had an overly enthusiastic attitude toward social functions, which the authors understood that it is a compensatory mechanism to overcome inner fears, doubts, and ambivalence. On the other hand, Brenghenti (1997) observed that women with a good personality and a high level of self-esteem, who were satisfied with their jobs, had a good relation with their husbands, and were willing to adopt a child and dealt with primary infertility without signs of psychological maladjustment.

  In a study done by Alhassan, Ziblim and Muntaka (2014), prevalence of depression among infertile women was 62% with level of depression showing a positive correlation with age of the women and duration of infertility. Childlessness is found to result in perceived role failure, with social and emotional consequences, and often results in social stigmatization of the women. The risk factors of depression and anxiety in infertility include female sex, age over 30, and lower level of education, lack of occupational activity, diagnosed male infertility and infertility duration of 3-6 years (Drosdzol and Skrzypulec, 2009).

  Depression has a significant relation with cause of infertility, duration of infertility, educational level, and job of women and anxiety has a significant relationship with duration of infertility and educational level. Anxiety and depression are most common after 4–6 years of infertility and especially severe depression could be found in those who had infertility for 7–9 years and suggested that psychological interventions especially in 4–9 years of infertility may prevent the surge in depression/anxiety and could presumably lead to increased pregnancy rates. (Ramezanzadeh, Aghssa, Nasrin, and Farid et al, 2004)

  Contrary to the above finding, women with a 2-3 year history of infertility had significantly higher depression scores as compared with women with infertility durations of <1 year or > 6 years. Peak of depression can be seen during the third year of infertility. After 3 years, optimistic attitude would change to despair and at last there will be emotional changes to adopt a child or live without one. Depression and anxiety symptoms improve as their age and duration of infertility increases. (Domar, Broome, Zuttermeister, Seibel & Friedman, 1992).

  Symptoms of depression are incredibly common during infertility. Infertility can have a big impact on one’s sex life, it can negatively impact one’s relationship with friends and family and our religious/spiritual beliefs. (Cousineau and Domar, 2007). Also most women with primary infertility have depression mostly due to pressure from families for not getting pregnant. (Al-Homaidain, 2011).

  A study done by Ogawa, Takamatsu and Horiguchi (2011) to evaluate factors associated with the anxiety and depression of female infertility patients found out that increase in age, unemployment status and women who had undergone previous infertility treatment had a greater tendency towards experiencing depression, however women whose cause of
infertility was related to their male counterparts exhibited lower anxiety scores.

Women with identified causative factor for infertility has significantly higher depression scores than women with unexplained or undiagnosed infertility. (Domar et al., 1992). Anxiety and depression in childless women are also significantly associated with lack of husband's support and feelings of stress. (Matsubayashi, Hosaka, Izumi, Suzuki, Kondo & Makino, 2004). Irrational parenthood cognitions and pressure by relatives are also predictors of depression among infertile women (Laya farzadi & Ghasemzadeh, 2008). Patients with infertility have increased depression and anxiety after infertility treatment failure, than for those without a history of treatment. (Maroufizadeh, Karimi, Vesali & Samani, 2015). Depression and anxiety deserve much clinical attention because they greatly affect the quality of life.

Quality of Life and Infertility

Since 1948, when the World Health Organization defined health as being not only the absence of disease and infirmity but also the presence of physical, mental, and social well-being, quality-of-life issues have become steadily more important in health care practice and research. (Testa, 2000).

Infertility is associated with quality of life impairments and affects all the domains of quality of life i.e. Emotional, mind/body, relational, social, environmental and tolerability domain, but it has major impact on the emotional aspect of the infertile couples, there is also a significant difference in the quality of life of infertile male and female partners (Dillu, Sheoran, & Sarin, 2013). Infertile women have concerns regarding life satisfaction, sexuality, self-blame self-esteem and avoidance of friends, who deserves much needed psychological attention. (Anderson, Sharpe, Rattray, & Irvine, 2003).

Infertility readily decreases quality of life for women and requires on going emotional and instrumental support, they also express a variety of negative emotions, including guilt, disappointment at oneself, frustration, fear of disappointment, self-blame, grief, devastation, anxiety, sadness and depression (Karien, 2013).

A cross-sectional study done by Kahyaoglu and Kaplan (2014) to examine the relationships between anxiety and depression and Quality of life reported that infertility significantly reduced quality of life in women by increasing their anxiety and depression levels. A study done by Shindel, Nelson, Naughton, Ohebshalom and Mulham (2008) to assess quality of life, sexual health, and depression in the female partner of infertile couples found out that depression (19% of women had moderate and 13% had severe depression) and sexual dysfunction were prevalent in female partners of infertile couples, he also further pointed out that Female sexual function is positively correlated with male partner sexual function in this population.

The feelings of failure fear about operations need to have frequent examinations, and troubles leaving the workplace for appointments are found to be some of the difficulties among the women or couples who seek infertility treatment as they compromise with their financial status and day schedules. This could inadvertently affect their quality of life as evident by exhibiting signs of anxiety and depression. (Pinar et al., 2012).
RESEARCH METHODOLOGY

The literature helped the investigator to know the magnitude of the problem of infertility and its varying effects on various aspects of a human mind, body, relational and societal outlook, and supported the need of doing further research among women with Infertility in South India to strengthen the current research findings, thereby improving the quality of life among women with infertility.

Conceptual Framework

The Quality of life model by Cella, 1994 is used as a framework to guide this study. In this Model, Quality of life has been defined theoretically as a patient’s appraisal of and satisfaction with his or her current level of functioning compared to what he or she perceives to be possible or ideal. The four domains studied under this model are; a) physical well-being b) social well-being c) emotional well-being d) functional well-being.

In the present study, the domain of physical well-being refers to mind and body wellbeing i.e. Energy, fatigue, pain, discomfort, concentration and activities. The domain of social/family well-being refers to social inclusion, expectations, stigma and support. The domain of emotional well-being refers to Jealousy, resentment, sadness and depression. The domain of functional well-being refers to work capacity, acceptance of illness, ability to move on in life and perception of quality of life.

The variables being assessed are anxiety, depression and selected demographic and clinical variables. Anxiety and depression may be experienced by individuals experiencing primary infertility, and are assessed using questionnaires for anxiety and depression. The demographic variables consist of age, place of residence, education, occupation, religion, type of family and monthly income, while clinical variables consist of duration of infertility, etiology, previous treatment and number of times of treatment.

Anxiety and depression experienced by patients with primary infertility along with their demographic and clinical variables has an impact over their quality of life. This influence of anxiety and depression is transmitted along the four domains of the individual’s well-being as a vicious cycle which in turn affects her perceptions of quality of life.

RESEARCH METHODOLOGY

Research Design

A descriptive correlational design was used for the study to assess the relationship between anxiety, depression and quality of life and selected demographic and clinical variables among women with primary infertility.

Setting of the Study

The Christian Medical College, Vellore is a tertiary care centre for providing multi-specialty health care services. It is a 2695 bedded hospital. The Study was conducted in the Reproductive Medicine Unit.

The Reproductive Medicine Unit is situated in the Centenary building. The unit has general and private consultancies which functions every Tuesday and Friday in a week, and follow up clinic that functions from Monday to Saturday.

Population

The study population consists of women with primary infertility attending the Reproductive Medicine unit.

Sample

It comprises of women with primary infertility who attend the Reproductive medicine Unit of CMC, Vellore, provided they fulfil the inclusion criteria.

Sample Size

From the Pilot study, the correlation between anxiety and quality of life, and depression and quality of life was inferred to be 0.673 and 0.731 respectively. Hence, to estimate the relationship between the outcome variables, the sample size calculation was chosen from Bonnet and Wright (2000), which corresponded to the correlation coefficient of 0.70, a error of 5% and a precision of 0.3, which yielded a minimum required number of 49 samples, and hence 70 samples were decided to be taken for the main study.

Sampling Technique

Convenience sampling technique was used to select the participants for my study.

Criteria for Sample Selection

Inclusion Criteria

- Women diagnosed with primary infertility.
- Women who can read and understand Hindi and English.

Exclusion Criteria

- Pregnant women
- Women unwilling to give consent for the study.

Data Collection Instrument

Questionnaires will be used to collect the data regarding Anxiety, Depression and Quality of life among the study participants. The data collection instrument consisted of the following;

Part A- Socio-Demographic Data

This is prepared by the investigator. The Socio-demographic variables consists Age, religion, educational status, type of family, place of residence, occupation and monthly income. No score will be given. Data generated from this section will be used for descriptive analysis.

Part B- Clinical Data

This is also prepared by the Investigator. The Clinical data consists of Duration of infertility, etiology, previous treatment and number of times of treatment.

Section B-Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI), created by Aaron T. Beck, MD, and colleagues, is a 21-item multiple-choice self-report inventory that measures the severity of an anxiety in adults and adolescents. Because the items in the BAI describe the
emotional, physiological, and cognitive symptoms of anxiety but not depression, it can discriminate anxiety from depression.

**Scoring and interpretation**

<table>
<thead>
<tr>
<th>Score</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>Minimal anxiety</td>
</tr>
<tr>
<td>8-15</td>
<td>Mild anxiety</td>
</tr>
<tr>
<td>16-25</td>
<td>Moderate anxiety</td>
</tr>
<tr>
<td>26-63</td>
<td>Severe anxiety</td>
</tr>
</tbody>
</table>

**Section C-Beck Depression Inventory**

The Beck Depression Inventory (BDI), also created by Aaron T. Beck and colleagues, is a 21-item multiple-choice self-report inventory that measures the severity of a depression in adults and adolescents.

The highest possible total for the whole test would be sixty-three and the lowest possible score for the test would be zero.

**Scoring and Interpretation**

<table>
<thead>
<tr>
<th>Scores</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>Without depression</td>
</tr>
<tr>
<td>17-27</td>
<td>Mild depression</td>
</tr>
<tr>
<td>28-34</td>
<td>Moderate depression</td>
</tr>
<tr>
<td>35-63</td>
<td>Severe depression</td>
</tr>
</tbody>
</table>

**Section D-FertiQoL SCALE**

The internationally developed and validated FertiQoL questionnaire consists of 26 questions. Besides two general items, it contains 24 specific items covering four subscales of QoL: Mind–Body, Relational, Social and Emotional. The optional FertiQoL treatment module is not used in this study.

**Scoring and Interpretation**

- Reversing items (from 0-4 to 4-0)
- Calculate raw scores by summing all items that belong to the subscale
- To compute scaled scores for the subscale and total scales, multiply the relevant raw score by 25/k where k is the number of items in the sub scale. The scaled scores range is 0-100
- A higher score on one of the subscales means a better Quality of life with subscale scores ranging from 0 to 100.

**Validity and Reliability**

**Beck anxiety inventory**- Internal consistency (Cronbach’s alpha) ranges from .92 to .94.

**Beck’s depression inventory**

Internal consistency (Cronbach’s alpha) ranges from 0.89 – 0.91

**Ferti QoL scale**

FertiQoL was tested for its reliability and validity. Cronbach’s reliability statistics reported in the literature for this scale is 0.72 and 0.92 which is satisfactory. Following are the Cronbach’s reliability score for each subscale;

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional subscale</td>
<td>.90</td>
</tr>
<tr>
<td>Mind–body subscale</td>
<td>.85</td>
</tr>
<tr>
<td>Relational subscale</td>
<td>.80</td>
</tr>
<tr>
<td>Social subscale</td>
<td>.75</td>
</tr>
</tbody>
</table>

**Pilot Study**

Pilot study was conducted to assess the feasibility of the study in the Reproductive Medicine unit of Christian Medical College, Vellore. It was conducted for a period of 1 week. The Researcher administered the questionnaires to 8 patients with Primary infertility who met the inclusion criteria after obtaining written consent from them.

**Data Collection Procedure**

The data collection was carried out in the Reproductive Medicine Unit for a period of six weeks from 01.06.15 to 12.07.15. The researcher began the data collection at the scheduled time i.e. 8 am to 4 pm, throughout the week except on Sunday beginning from the first week of data collection by using a convenience sampling technique. The study participants who met the inclusion criteria were identified through review of charts and records and once the study subjects were screened for their eligibility into study, rapport was established with them. The study participants were called into a room in the unit where patient information sheet was given and informed consent was obtained, after which demographic and clinical data was collected and questionnaires regarding anxiety, depression and quality of life in the language of their choice were given. The study subjects were given approximately 30 minutes during which they were seated comfortably and filled the questionnaires.

**Data Collection Schedule**

<table>
<thead>
<tr>
<th>Days</th>
<th>Time</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>8am to 4pm</td>
<td>Reproductive Medicine Unit</td>
</tr>
<tr>
<td>Tuesday</td>
<td>8am to 4pm</td>
<td>Reproductive Medicine Unit</td>
</tr>
<tr>
<td>Wednesday</td>
<td>8am to 4pm</td>
<td>Reproductive Medicine Unit</td>
</tr>
<tr>
<td>Thursday</td>
<td>8am to 4pm</td>
<td>Reproductive Medicine Unit</td>
</tr>
<tr>
<td>Friday</td>
<td>8am to 4pm</td>
<td>Reproductive Medicine Unit</td>
</tr>
<tr>
<td>Saturday</td>
<td>8am to 1pm</td>
<td>Reproductive Medicine Unit</td>
</tr>
</tbody>
</table>

**Ethical Consideration**

Permission for conducting the study was obtained from the research committee and the Head of department of Reproductive Medicine Unit. A written consent was obtained from all the participants, after informing them about the following:

- Purpose of the study
- Voluntary participation of the subjects
- Risks and benefits
- Maintenance of confidentiality
- Freedom to discontinue participation without any repercussions.

**Data Management And Analysis Plan**

- SPSS 17.0 version was used for data analysis.
- Descriptive statistics such as mean, standard deviation and range were used to describe the demographic and clinical variables.
- The scores for anxiety, depression and Quality of Life (QOL) subscales are presented as descriptive statistics and frequencies. Total scores were categorized and presented as frequency tables and bar plots.
- Pearson correlation coefficient was used to correlate anxiety, depression and quality of life along with scatter plots.
Chi square test was used to determine the association between anxiety, depression and quality of life with the selected demographic and clinical variables.

**Data Analysis and Findings**

This chapter represents the analysis and interpretation of data and study findings. Data entry and analysis was done using SPSS Software Version 17.0 software. Descriptive statistics like frequencies and percentages are used to present the demographic and clinical variables. Pearson’s correlation coefficient and scatter plot was used to identify the mutual relationship between anxiety, depression and quality of life among women with primary infertility. Chi square test was used to identify the association between the variables with selected demographic and clinical variables. Findings of the study are represented as tables and figures under the following sections.

**Section A:** Distribution of primary infertility women based on demographic & clinical variables.

**Section B:** Descriptive analysis of anxiety, depression and quality of life among primary infertility women

**Section C:** Relationship between anxiety, depression and quality of life among women with primary infertility

**Section D:** Association between anxiety, depression and quality of life with selected demographic and clinical variables.

**Table 1** Distribution of primary infertility women based on their demographic variables. (N=70)

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>18</td>
<td>25.7</td>
</tr>
<tr>
<td>26-30</td>
<td>33</td>
<td>47.1</td>
</tr>
<tr>
<td>31-35</td>
<td>18</td>
<td>25.7</td>
</tr>
<tr>
<td>36-40</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>High school</td>
<td>8</td>
<td>11.4</td>
</tr>
<tr>
<td>Higher secondary</td>
<td>5</td>
<td>7.1</td>
</tr>
<tr>
<td>Graduate</td>
<td>35</td>
<td>50.0</td>
</tr>
<tr>
<td>Post graduate</td>
<td>21</td>
<td>30.0</td>
</tr>
<tr>
<td>Place of residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>62</td>
<td>88.6</td>
</tr>
<tr>
<td>Rural</td>
<td>8</td>
<td>11.4</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>58</td>
<td>82.9</td>
</tr>
<tr>
<td>Muslim</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Christian</td>
<td>10</td>
<td>14.3</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>29</td>
<td>41.4</td>
</tr>
<tr>
<td>Home maker</td>
<td>41</td>
<td>58.6</td>
</tr>
<tr>
<td>Type of family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>28</td>
<td>40</td>
</tr>
<tr>
<td>Joint</td>
<td>42</td>
<td>60</td>
</tr>
<tr>
<td>Income (Rs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2000</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>2000-5000</td>
<td>3</td>
<td>4.3</td>
</tr>
<tr>
<td>5000-10000</td>
<td>9</td>
<td>12.9</td>
</tr>
<tr>
<td>&gt;100000</td>
<td>57</td>
<td>81.4</td>
</tr>
</tbody>
</table>

Table 1 shows that majority of the women (47.1%) were in the age group of 26-30 years with a mean age group of \(\pm SD\) 28 ± 3.63 years, and comprised of age ranging from 20 to 36 years. Majority of the women were graduates (50%) and belonged to joint families (60%). Majority of the subjects were home makers (58.6%), 82.9% were Hindus, 88.6% resided in urban areas and majority (81.4%) had a monthly family income of >Rs.10,000.

**Table 2** Distribution of primary infertility women based on their selected clinical variables

<table>
<thead>
<tr>
<th>Clinical variables</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of infertility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2 years</td>
<td>13</td>
<td>18.6</td>
</tr>
<tr>
<td>2-4 years</td>
<td>37</td>
<td>52.9</td>
</tr>
<tr>
<td>4-6 years</td>
<td>11</td>
<td>15.7</td>
</tr>
<tr>
<td>&gt;6 years</td>
<td>9</td>
<td>12.9</td>
</tr>
<tr>
<td>Etiology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male factor</td>
<td>15</td>
<td>21.4</td>
</tr>
<tr>
<td>Female factor</td>
<td>31</td>
<td>44.3</td>
</tr>
<tr>
<td>Both</td>
<td>13</td>
<td>18.6</td>
</tr>
<tr>
<td>Unexplained</td>
<td>11</td>
<td>15.7</td>
</tr>
<tr>
<td>Previous treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>39</td>
<td>55.7</td>
</tr>
<tr>
<td>No</td>
<td>31</td>
<td>44.3</td>
</tr>
<tr>
<td>No. of times of treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No treatment</td>
<td>31</td>
<td>44.3</td>
</tr>
<tr>
<td>Once</td>
<td>24</td>
<td>32.9</td>
</tr>
<tr>
<td>2-3 times</td>
<td>16</td>
<td>22.9</td>
</tr>
</tbody>
</table>

Table 2 depicts that majority of the women have infertility with a duration of 2-4 years (52.9%). The cause of infertility was mainly due to female factor (44.3%) the remaining contributed to male factor, both male and female factor and unexplained cause of infertility. Majority of the women (55.7%) had received previous fertility treatments. From the ones who had previous treatment, majority of them (34.3%) had been treated more than once.

Distribution of levels of anxiety, depression and quality of life among women with Primary Infertility

![Figure 2. Distribution of levels of anxiety among women with primary infertility](image)

Figure 2 shows that majority of the women (37.14%) with primary infertility had mild levels of anxiety.
Figure 3 Distribution of anxiety symptoms among women with primary infertility

Figure 3 shows that nervousness (69.90%) and being terrified (60%) were the commonest symptom experienced by the women with primary infertility.

Figure 4 Distribution of levels of depression among women with primary infertility

Figure 4 shows that majority of the subjects (60.00%) were not depressed.

Figure 5 Distribution of quality of life among women with primary infertility

Figure 5 shows that majority of the subjects (42.86%) enjoyed good quality of life.

Table 3 Descriptive statistics of Quality of life domains and total quality of life

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std.Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mind-Body</td>
<td>70</td>
<td>0.00</td>
<td>100.00</td>
<td>64</td>
<td>24</td>
</tr>
<tr>
<td>Emotional</td>
<td>70</td>
<td>12.50</td>
<td>100.00</td>
<td>57</td>
<td>21</td>
</tr>
<tr>
<td>Relational</td>
<td>70</td>
<td>16.60</td>
<td>100.00</td>
<td>76</td>
<td>18</td>
</tr>
<tr>
<td>Social</td>
<td>70</td>
<td>8.30</td>
<td>100.00</td>
<td>65</td>
<td>22</td>
</tr>
<tr>
<td>Total QOL</td>
<td>70</td>
<td>26.00</td>
<td>98.95</td>
<td>66</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 3 shows that among the four domains of quality of life among primary infertility women, relational domain has the highest aspect of quality of life and emotional domain has a poor aspect of quality of life.

Relationship between anxiety, depression and quality of life

Figure 7 Co-relation between anxiety and quality of life

Figure 7 shows that there is a significant negative correlation between quality of life and anxiety of the study participants. ($r = -0.754, p < 0.001$). It indicates that with increased quality of life, anxiety decreases.
Figure 8 Co-relation between depression and quality of life.

Figure 8 shows that there is a significant negative correlation (r = -0.597, p < 0.001) between quality of life and depression of the study participants. It is apparent from the figure that depression decreases with good quality of life.

Table 4 shows that there is a negative correlation between anxiety and quality of life (r = -0.58; p < 0.001) and also there is a strong negative correlation with depression and quality of life (r = -0.75; p < 0.001). Each quality of life domains were also correlated with anxiety and depression which were significant.

Table 5 Association of anxiety with selected demographic and clinical variables among women with primary infertility.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Minimal (0-7)</th>
<th>Mild (8-15)</th>
<th>Moderate (16-25)</th>
<th>Severe (26-63)</th>
<th>Total (%)</th>
<th>Chi square</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.18-25</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td>18</td>
<td>17.71 0.039*</td>
<td></td>
</tr>
<tr>
<td>b.26-30</td>
<td>7</td>
<td>12</td>
<td>10</td>
<td>4</td>
<td>33</td>
<td>30       0.75</td>
<td></td>
</tr>
<tr>
<td>c.31-35</td>
<td>9</td>
<td>50</td>
<td>5</td>
<td>0</td>
<td>18</td>
<td>17.71 0.039*</td>
<td></td>
</tr>
<tr>
<td>d.36-40</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1         1.00</td>
<td></td>
</tr>
<tr>
<td>Education:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Primary</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1         1.00</td>
<td></td>
</tr>
<tr>
<td>b.High school</td>
<td>0</td>
<td>6</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>8         0.34</td>
<td></td>
</tr>
<tr>
<td>c.Higher secondary</td>
<td>1</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0         1.00</td>
<td></td>
</tr>
<tr>
<td>d.Graduate</td>
<td>11</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>21</td>
<td>21.30 0.040*</td>
<td></td>
</tr>
<tr>
<td>e.Post graduate</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>21</td>
<td>21.30 0.040*</td>
<td></td>
</tr>
<tr>
<td>Occupation:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Employed</td>
<td>12</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>29</td>
<td>29        1.00</td>
<td></td>
</tr>
<tr>
<td>b.House wife</td>
<td>10</td>
<td>41</td>
<td>9</td>
<td>5</td>
<td>41</td>
<td>3.609 0.307</td>
<td></td>
</tr>
<tr>
<td>Place of residence:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Urban</td>
<td>18</td>
<td>29</td>
<td>38</td>
<td>14</td>
<td>62</td>
<td>24.60 0.120</td>
<td></td>
</tr>
<tr>
<td>b.Rural</td>
<td>4</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td>8</td>
<td>2.14 0.543</td>
<td></td>
</tr>
<tr>
<td>Religion:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Hindu</td>
<td>11</td>
<td>39</td>
<td>13</td>
<td>6</td>
<td>58</td>
<td>51        0.001</td>
<td></td>
</tr>
<tr>
<td>b.Christian</td>
<td>3</td>
<td>30</td>
<td>4</td>
<td>0</td>
<td>15</td>
<td>15        0.015</td>
<td></td>
</tr>
<tr>
<td>c.Muslim</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0         1.00</td>
<td></td>
</tr>
<tr>
<td>d.Other</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1         1.00</td>
<td></td>
</tr>
<tr>
<td>Type of family:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Joint</td>
<td>14</td>
<td>33</td>
<td>11</td>
<td>4</td>
<td>42</td>
<td>2.82 0.609</td>
<td></td>
</tr>
<tr>
<td>b.Nuclear</td>
<td>18</td>
<td>28</td>
<td>16</td>
<td>5</td>
<td>57</td>
<td>5.97 0.760</td>
<td></td>
</tr>
<tr>
<td>Place of residence:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Urban</td>
<td>18</td>
<td>29</td>
<td>38</td>
<td>14</td>
<td>62</td>
<td>24.60 0.120</td>
<td></td>
</tr>
<tr>
<td>b.Rural</td>
<td>4</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td>8</td>
<td>2.14 0.543</td>
<td></td>
</tr>
<tr>
<td>Religion:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Hindu</td>
<td>11</td>
<td>39</td>
<td>13</td>
<td>6</td>
<td>58</td>
<td>51        0.001</td>
<td></td>
</tr>
<tr>
<td>b.Christian</td>
<td>3</td>
<td>30</td>
<td>4</td>
<td>0</td>
<td>15</td>
<td>15        0.015</td>
<td></td>
</tr>
<tr>
<td>c.Muslim</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0         1.00</td>
<td></td>
</tr>
<tr>
<td>d.Other</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1         1.00</td>
<td></td>
</tr>
<tr>
<td>Type of family:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Joint</td>
<td>14</td>
<td>33</td>
<td>11</td>
<td>4</td>
<td>42</td>
<td>2.82 0.609</td>
<td></td>
</tr>
<tr>
<td>b.Nuclear</td>
<td>18</td>
<td>28</td>
<td>16</td>
<td>5</td>
<td>57</td>
<td>5.97 0.760</td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05 statistically significant

Table 5 shows that there is a significant association between anxiety and demographic variables such as age (p=0.039) and education (p=0.046) of women with primary infertility.

Table 6 Association of depression with demographic and clinical variables among women with primary infertility.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Without depression (0-16)</th>
<th>Mild (17-27)</th>
<th>Moderate (28-34)</th>
<th>Severe (35-63)</th>
<th>Total square</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.18-25</td>
<td>14</td>
<td>77.8</td>
<td>2</td>
<td>11.1</td>
<td>2</td>
<td>11.1    0.260</td>
</tr>
<tr>
<td>b.26-30</td>
<td>16</td>
<td>48.5</td>
<td>12</td>
<td>36.4</td>
<td>2</td>
<td>3       0.102</td>
</tr>
</tbody>
</table>

*P<0.05 statistically significant
Table 7: Association of quality of life with demographic and clinical variables among women with primary infertility

<table>
<thead>
<tr>
<th>Variable</th>
<th>Poor (0-40%)</th>
<th>Average (41-65%)</th>
<th>Good (66-75%)</th>
<th>High (76-100%)</th>
<th>n</th>
<th>Chi square</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.18-25</td>
<td>5 (5.6)</td>
<td>27.8 (44.2)</td>
<td>22.2 (11.1)</td>
<td>40.0 (6.1)</td>
<td>1 (100)</td>
<td>0.022*</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>b.26-30</td>
<td>6 (1.1)</td>
<td>27.3 (48.5)</td>
<td>18.2 (8.2)</td>
<td>33.3 (33.3)</td>
<td>1 (100)</td>
<td>0.031*</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>c.31-35</td>
<td>3 (11.1)</td>
<td>22.2 (27.8)</td>
<td>27.8 (5.4)</td>
<td>19.4 (26.7)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>d.36-40</td>
<td>0 (0)</td>
<td>38.4 (6.1)</td>
<td>19.4 (26.7)</td>
<td>0.0</td>
<td>0 (0)</td>
<td>0.760</td>
<td>0.471</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Primary</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>b.High school</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>c.Higer</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>d.Graduate</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>Place of residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Urban</td>
<td>1 (12.2)</td>
<td>34.1 (43.4)</td>
<td>43.9 (28.6)</td>
<td>0.0</td>
<td>0 (0)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>b.Rural</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.Hindu</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>b.Muslim</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>c.Christian</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>d.Others</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>Duration of infertility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.&lt;2 years</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>b.2-4 years</td>
<td>2 (5.1)</td>
<td>18.9 (20.4)</td>
<td>18.2 (20.4)</td>
<td>54.1 (21.6)</td>
<td>8 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>c.4-6 years</td>
<td>2 (18.2)</td>
<td>45.5 (21.6)</td>
<td>18.2 (20.4)</td>
<td>18.2 (20.4)</td>
<td>11 (100)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
<tr>
<td>d.&gt;6 years</td>
<td>2 (22.2)</td>
<td>44.4 (21.6)</td>
<td>33.3 (21.6)</td>
<td>0.0</td>
<td>0 (0)</td>
<td>0.173</td>
<td>0.154</td>
</tr>
</tbody>
</table>
| Table 6 shows that there is a significant association between depression and demographic variables such as occupation (p=0.031) and income (p=0.022) of women with primary infertility.

**DISCUSSION**

The study was conducted to assess the relation of anxiety, depression and quality of life among women with primary infertility attending the Reproductive Medicine Unit of Christian Medical College, Vellore. A total of 70 women with primary infertility were included in the study. Convenience

*p<0.05 statistically significant
sampling technique was used for selecting the samples. Beck anxiety inventory, Beck depression inventory and Fertility quality of life scale, which are standardized and validated tools, were used to assess anxiety, depression and quality of life among women with primary infertility.

The socio demographic variables assessed in the study were age, education, religion, type of family, place of residence, occupation and income. Analysis of these variables revealed that higher percentage (47.1%) of women with primary infertility belonged to the age group of 26-30 years. The mean age of the subjects with primary infertility was 28±3.63 years and ranged from 20-36 years. The demographics of the study subjects were almost similar to a study done by Tripathy, Ahmad, Bang, Min and Hahn (2014), where the age group of infertile women ranged from 25-34 years. In the present study, most (50%) of the subjects were graduates, and majority of them were from urban areas (88.6%). The analysis also revealed that most of the study subjects were Hindus (82.9%) and majority were house wives (58.6%) and belonged to joint families (60%). Majority had a family income of >Rs.10,000 (81.4%) per month. The clinical variables that were selected for this study were duration of infertility, etiology, previous treatment and number of times of treatment. Analysis of these data revealed that majority of the study participants had duration of infertility for 2-4 years (52.9%). These findings were consistent with the findings from a study done by Ogawa, Takamatsu and Horuguchi (2011) where the duration of infertility of the study participants were 3.3±2.8 years. Female factor infertility was the most common cause of infertility (44.3%) in the present study. Most of them had previous history of infertility treatment (55.7%) and 34.3% of the study participants had received treatment at least once and 22.9% of the study participants had received treatment 2-3 times.

The first objective of the study was to assess anxiety, depression and the quality of life among women with primary infertility.

Anxiety – Infertility is an important health problem that is prevalent all over the world and it can have negative impact on the physical, psychological and social aspects of life. It creates anxiety among individuals suffering from infertility problems, and can be contributed to a number of factors such as advancing age, unemployment, type of family, previous treatment failure, marital conflicts and social stigmatization to name a few. In the present study, factors such as age and education of the women contributed to anxiety. The mean Beck anxiety score was found out to be 13.3±10.8 and analysis of levels of anxiety revealed that 22 (31.43%) had minimal levels of anxiety, 26 (37.14%) had mild anxiety, 16 (22.86%) had moderate anxiety and 6 (8.57%) had severe anxiety. In a study done by Pinar and Zeynegiloglu (2011), the investigators reported that out of 160 individuals with infertility, 62.5% experienced "mild" anxiety, while 25% had "medium" and 12.5% had "severe" anxiety.

Through the analysis of Beck anxiety inventory, it was revealed that 49(69%) study participants exhibited “nervousness” in varying degrees; making it the commonest symptom to be experienced by the study participants. 42 (60%) participants were “terrified”, 40 experienced “feeling hot” (57.10%) and “fear of worst happening” (57.10%), 39 (55.7%) participants experienced “hot or cold sweats”, another 38 (54.30%) participants experienced “dizzy or light headed ness” and were “scared” Only 6 (8.50%) study participants experienced “Fear of dying” making it the least experienced symptom. This could be attributed to the universal fact that women with infertility problems have a vulnerable state of mind and anticipation of the future outcomes related to the success of treatment can deteriorate their emotional state.

Depression- The inability to have children is undeniably a very distressing experience in women with infertility problems, which can lead to major psychological disorders such as depression. The overall percentage of depression disorder in infertile women ranges between 24 and 36% (Homaidan, 2011). The Beck Depression Inventory was used to assess depression among the study participants. It is also a likert-type scale consisting of 21 items. The total scores range between 0 and 63. It is used in clinical applications in order to determine the severity of depression. The mean score for depression in the present study was 15.2±9.8 with 40% of the study participants showing some form of depression. Further analysis revealed that 42 (60%) of the study participants with primary infertility had no depression, 19 (27.14%) had mild depression, 6 (8.57%) had moderate depression and 3 (4.29%) of the study participants had severe depression.

These findings are not in consistence with the study findings done by Alhassan Abass (2014), where the investigator reported that out of 100 infertile women, 40% suffered from mild depression, 22% suffered from moderate depression and there was no recordings of any severe forms of depression. Analysis of selected items of Beck depression inventory revealed that in terms of “social withdrawal”, 32 (45.7%) participants expressed “I have not lost interest in other people”, 22 (31.4%) expressed “I am less interested in other people now than I used to be, 11 (15.7%) expressed “I have lost most of my interest in other people and have little feeling for them” and 5 (7.1%) expressed “I have lost all my interest in other people and don’t care about them at all”. In some communities, the stigma of childlessness is so great that infertile women are socially isolated and neglected. A couple of the of the participants also expressed that they didn’t like to attend social functions, because they were being questioned as to why they are childless, and become the subject of pity, which in turn lowers their self-esteem to a great extent.

On the aspect of “sense of failure”, 38 (54.3%) study participants expressed “I do not feel like a failure”, 14 (20%) expressed “I feel I have failed more than the average person”, 8 (11.4%) expressed I feel I have accomplished very little that is worthwhile”, 6 (8.6%) expressed “as I look back on my life all I can see is a lot of failures” and 4 (5.7%) expressed “I feel I am a complete failure as a person”. This can be attributed to the fact that procreation is one of the ultimate and significant aspects of a woman once she gets married, and inability to do so puts a woman under great pressure and thereby, they perceive failure on one’s part.

Literature from various sources documented that infertility has a negative impact on the sexual life of the woman. In the present study one of the item on the beck depression inventory, highlights on “loss of libido”, and analysis revealed that 40 (57.1%) of the study participants expressed “I have not noticed any recent change in my interest in sex”, 24 (34.3%) expressed “I am less interested in sex than I used to be”, 11
Quality of life- Quality of life is defined by the world health organization (2014) as the “individual’s perceptions of their position in life in the context of the cultural and value systems in which they live and in relation to their goals, expectations, standards and concerns”. In many societies around the globe, motherhood provides a kind of social respectability for women, and lack of pregnancy has been perceived as a humiliating condition. Infertility may adversely influence quality of life. In the present study, quality of life among the primary infertility women was assessed using FertiQoL tool, which is an internationally developed and validated questionnaire consisting of 26 questions. Besides two general items, it contains 24 specific items covering four subscales of quality of life: Mind–Body, Relational, Social and Emotional. The optional FertiQoL treatment module is not used in this study. The mean quality of life score among the study participants was 65.5±16.5. This finding is similar to a study done by Boivin (2011) where the FertiQoL scores for the woman with infertility were low (M = 53.3, SD = 16.2). In the present study, majority of the women had good quality of life 30(42.9%), 15(21.4%) had high quality of life, 19(27.1%) had moderate quality of life and 6(8.6%) had poor quality of life.

Further analysis of the quality of life domains revealed that the mean scores of each domain (Emotional, mind and body, relational and social domain) were 57.6±21, 64±23.7, 75±18.3 and 64.6±22.1 respectively. The findings depict that emotional domain was the most affected aspect of quality of life related to infertility, this is evident from the response that the participants made on the FertiQoL questionnaire, where 22(31.4%) expressed that they were moderately able to cope with their fertility problems, 21(30.0%) were not able to cope much with their fertility problems and only 16(22.9%) were able to completely cope with their fertility problems. This finding is supported by a study done by Dillu, Sheoran and Sarin (2013), where the investigators also reports that infertility affects all aspects of quality of life domains, but it has a major impact on the emotional aspect of quality of life. In the present study, the participants also expressed feelings of loss and grief about not being able to have a child in varying degrees (Always, Very often, Quite often, Seldom and Never) 18(25.7%), 12(17.1%), 20(28.6%), 12(17.1%) and 8(11.4%) respectively. The least affected quality of life domain was relational, and this could be attributed to the fact that many of the women had a supportive and intimate relationship with their spouse, which gave a boost in their quality of life. This finding is evident from the response that the participants made, where 43(61.4%) of them were satisfied with their sexual relationship even though they have fertility problems and only 5(7.1%) had a moderately negative impact on their relationship with their spouse. However the present study’s finding is in contrast with the study findings of Kohan, Ghasemi and Beigi (2015) where the investigator reports that infertility affects various dimensions of women’s sexual life and causes problems for them like “disturbed in femininity-body image,” “discouragement of sexual relations,” “sacrifice of sexual pleasure for the sake of getting pregnant,” “confusion in sexual relation during infertility treatment,” and “striving to protect their marriage.”

The second objective of the study was to identify the mutual relationship between Anxiety, Depression and Quality of life among women with primary infertility

The present study brought to light that, there exist a negative co-relation between anxiety and quality of life, which is depicted by an increase in quality of life when anxiety decreases(r= -0.754, p < 0.001). It was also found that there is a negative co-relation between depression and quality of life, which is also depicted by increase in quality of life as depression levels decreases (r= -0.597, p < 0.001 ). Further analysis revealed that there is a positive co-relation between anxiety and depression, which depicts that anxiety increases with depression (r= 0.625, p=0.001).

This finding is in accordance with the results of a study done by Aarts, Empel, Boivin, Nelen & Kremer et al.(2011)where infertile women with a high quality of life had lower levels of anxiety or depression, and vice versa. The study confirms the expected negative relation between quality of life as measured by FertiQoL and anxiety and depression. Another study done by Huppleschoten et al., (2013) reports the existence of association between the patient’s quality of life and their levels of anxiety and depression. This result is an expected relationship, and manifestation of anxiety and or depression can negatively influence the quality of life of women experiencing infertility. This reflects that paying attention to these variables is of importance for the fertility care givers and they should incorporate more tailored care that could lead to positive well-being and care experiences and improved patient-centeredness of care.

Thus my study findings support the hypothesis (H1) that, there exist a mutual relationship between anxiety, depression and quality of life among primary infertility women.

The third objective of the study was to identify the association between anxiety, depression and quality of life with selected demographic and clinical variables

Anxiety with selected demographic and clinical variables-

Analysis of demographic variables with respect to anxiety reveals that there is a significant difference in anxiety among women with primary infertility in relation to their age (p<0.05). Anxiety was found to be highest among the age group of 26-30 years. This finding was consistent with a study done by Maroufizadeh, Karimi, Vesali and Samani (2015), where age was negatively associated with anxiety.However it contrasted the findings from a study done by Ramezanzadeh et al., (2004) in Iran where age showed no significant effect on anxiety among women with primary infertility.

Further analysis in the present study revealed that educational level of the woman is also associated with the level of anxiety (P=0.046).Women who were graduates and post graduates experienced more anxiety as compared to women who had attained primary, high school and higher secondary level of education. However these findings were in contrast to the
findings reported by Ramezanzadeh et al (2004), where the investigator cited that educational level had a significant and negative relation to anxiety. This finding is supported by another study done by Maroufizadeh et al., (2014) where it reports that patients who had an academic education obtained significantly lower anxiety scores than did those who had a non-academic education.

In the present study, there was no significant difference in anxiety levels between different occupations. This finding is supported by a study done by Mariko et al., (2011) where it reported that there was no difference in the anxiety scores among the employed and non-employed woman with primary infertility. However these findings are not consistent with the study findings done by Upkong (2006), where unemployed status of the women had the highest prevalence for anxiety when compared with the employed (P=0.008). Further analysis in the present study showed that there was no statistical difference among the women with respect to place of residence, religion and type of family. These findings are consistent with the study done by Kishanth et al., (2014) and Mariko et al., (2011), where both the studies reported that there was no direct association between anxiety scores and duration of infertility. However these findings are not in consistent with a study done by Ramezanzadeh et al., (2004), which reveals that anxiety increases with duration of infertility (P=0.048). Various study findings also suggest that women who had experienced infertility for a long or medium range of time presents with a significantly lower state of anxiety, and there was a trend of decreasing psychological stress with lengthening of infertility time.

Further analysis reveals that etiology of infertility did not have any statistical significance with the levels of anxiety (P=0.892). This finding is supported by a study done by Maroufizadeh Saman et al., (2014) in Iran, which reports that anxiety scores did not differ among the women with respect to cause of infertility. According to Mariko et al., (2011), women who knew that their husbands were infertile had significantly lower anxiety scores, as compared to those who did not know (P<0.05). In the present study, previous treatment of infertility and number of times of treatment had no significant difference among the study participants (P=0.987). This finding is not in consistent with the study findings done by Maroufizadeh Saman et al., (2014), where the investigators report that women with one treatment failure obtained significantly higher anxiety scores than those without a history of treatment failure (P=0.003).

**Depression with selected demographic and clinical variables** - Analysis of demographic variables reveals that there is no significant association among the study participants between age and depression (P=0.260). This finding however is not consistent with the study findings done by Mariko et al., (2011) in Japan, where it reports that as age increases, participants exhibit a greater tendency towards depression. Further analysis reveals that there is no statistical association between education and depression levels (P=0.471). Study done by Maroufizadeh Saman et al., (2014) showed that patients with a high level of education obtained significantly lower depression scores than did those with a low level of education (P=0.001).

In the present study, occupation of the study participants had a significant association with the depression levels (P=0.031) where housewives experienced more depression than those who are employed. This finding is supported by Ramezanzadeh Fatemeh et al., (2004) and Mariko et al., (2011) where both studies revealed similar findings, that depression were observed more in homemakers than outside employees. Further analysis in the present study revealed that there was no statistical association between place of residence and depression (P=0.679) which was consistent with study findings done by Sultan Sarwat (2009) Pakistan, where he reports that no significant association was seen among the participants in terms of their rural and urban dwelling with depression (P=0.35). Religion and type of family also did not have any statistical significance either. However there was a significant association between the monthly income and depression of the study participants (P=0.022).

A look at the clinical variables showed that there was no significant association between duration of infertility and depression (P=0.192). This finding is supported by studies done by Ramezanzadeh et al., (2004) and Mariko et al., (2011) where both investigators reported that there was no significant relationship between duration of infertility and depression (P-value = 0.106). Domar et al., (2007) found that depression peaked during the third year of infertility. Etiology or cause of infertility also did not have any significant association with depression (P=0.868). According to Al-Homaidan (2011), the depression rate among women who were the source of infertility was higher than those whose husbands were the source of infertility, but was not statistically significant.

History of previous infertility treatment did not have any significant association with depression (P=0.550). However a study done by Mariko et al., (2011) in Japan, reported that depression is more likely to occur in participants with a history of infertility treatment compared to those without such a history. Another study done by Salome et al., (2013) reported similar findings, which showed that couples who had previous history of treatment greater levels of depression in terms of cognitive and affective factors. Further analysis in the present study showed that number of times of treatment did not have any significant association with depression (P=0.221). In contrast to this finding, Maroufizadeh et al., (2014) reports that patients with two infertility treatment failures obtained significantly higher scores of depression than did those without a history of treatment (P=0.019).

**Quality of life with selected demographic and clinical variables** - Analysis of demographic variables reveals that there is no significant association between age and quality of life among the women with primary infertility (P=0.760). A study done by Khayata et al., (2002) reported that women aged above
30 years had greater anxiety that reflected on their mood, performance at work and socialization, thereby affecting their quality of life. This likely suggests a superimposed effect of age on the feelings of anxiety in response to biological time pressures and other social constraints.

Further analysis in the present study showed that there is no significant association between education and quality of life ($P=0.173$). However, a study done by Aduloju (2015) revealed that despite higher educational status of the woman affected with primary infertility, they still scored low in the physical, social, environmental and total quality of life scores, indicating that infertility affects the emotional status, general well-being and social relationship. In the present study significant association was seen between occupation and quality of life among the women with primary infertility ($P=0.022$). Further analysis in the present study revealed that there was no significant association between place of residence, religion, type of family, income and quality of life. Unemployed primary infertility women exhibits lower scores in psychological, social, environmental and total quality of life (Aduloju, 2015), this is likely because the demand of the jobs in women who are employed could make them to ignore or not to remember their infertility problems at such times, and thus implies better quality of life.

Analysis of clinical variables revealed that quality of life did not differ among women with primary infertility based on the clinical variables such as duration of infertility, etiology, previous treatment and number of times of treatment. This finding is consistent with a study done by Khayata (2002) where he reports that there was no association between quality of life and duration of infertility. The likely explanation could be that half of the study population were relatively young, or alternatively, this could indicate that emotional compensatory mechanisms and social adjustments occur in these infertile women after a period of time. The same author also reports that there was a strong correlation between the type of infertility and its impact on the quality of life because women with female and combined factor infertility showed higher scores than women treated because of male infertility.

In summary of the study findings from my third objective, it brings to light that age and education had a significant association with anxiety; occupation and income had a significant association with depression; and quality of life had a significant association with the occupation of the study participants.

Hence, the current study findings partially support the hypothesis (H2) that, there exist a significant association between anxiety, depression and quality of life with selected demographic and clinical variables among women with primary infertility.

**CONCLUSION**

The study findings gave an insight that socio-demographic variables such as age, education, occupation and income are associated with anxiety, depression and quality of life. There also exists a significant correlation between anxiety, depression and quality of life, indicating that women with primary infertility exhibits some form of anxiety and depression which adversely affects their quality of life. Therefore, physicians and nurses should be aware about anxiety-depression disorders among such vulnerable populations, and the necessity of referring patients to psychosocial counselors who provide professional infertility counseling, which has been found to be effective in bringing down the negative psychological symptoms and improve the quality of life of women suffering from infertility.

**SUMMARY AND RECOMMENDATIONS**

This chapter is the synopsis of the study. It gives a brief account of the significant findings generated, limitations, implications, suggestions and recommendations for further studies.

The study was done to assess the relationship between anxiety, depression and quality of life among primary infertility women attending the Reproductive medicine unit of Christian medical college Vellore. A descriptive correlational research design was adopted for this study. A sample size of 70 was achieved using convenience sampling technique, based on the inclusion criteria. The conceptual Quality of life Model by Cell; 1994 was used as a conceptual framework to guide the study. A pilot study established the feasibility of the study in terms of mode of administration and time plan. The study utilized three instruments: FertiQoL scale developed by Jacky Boivin, Janet takefman and Andrea braverman was used to assess the quality of life among the study participants. Beck anxiety and depression inventory were used to assess anxiety and depression respectively. The collected data was analysed using appropriate descriptive and inferential statistics.

**Major Findings of the Study**

A higher percentage (47.1%) of the study participants belonged to the age group of 26-30 years. The mean age of the subjects were 28 ± 3.63 years and ranged from 20-36 years. Most (50%) of the subjects were graduate, 88.6% resided in urban areas, 82.9% were hindus, 58.6% were house wives and 60% belonged to joint families.

- 52.9% of the study participants had duration of infertility for 2-4 years.
- Female factor infertility was the most common cause of infertility (44.3%).
- The most common symptoms of anxiety experienced by the study participants were “nervousness” (69%) and being “terrified” (60%).
- The least (6.50%) experienced symptom was “Fear of dying”.
- There was a significant association of age and education with anxiety of the study participants.
- Depression was higher in women who were housewives.
- There was a significant negative correlation between anxiety and quality of life ($p<0.05$) and also depression with quality of life ($p<0.05$) of the primary infertility women.
- There was a significant positive correlation between anxiety and depression ($p<0.001$).
- 40% of the primary infertility women had varying degrees of depression.
- Only about 8.57% had a poor quality of life.
• The study participants had a poor aspect of emotional domain but they had a fairly high aspect of relational domain.
• Occupation had a significant association with the quality of life of the primary infertility women. Quality of life was better for the employed women as compared to women who were housewives.

**Implications of the Study**

Many studies have documented that infertility negatively impacts their quality of life through anxiety, depression and marital disharmony which ultimately results from infertility problems. Women can manifest these symptoms as early as seeing a negative result from a pregnancy test. Furthermore, this emotional toll persist throughout the trials of infertility treatment. Nurses come in contact with these patients right from the time they are diagnosed with infertility till the completion of treatment or the successful outcome of a pregnancy. Therefore it is an inevitable part on the nurses working in reproductive or fertility clinics to be equipped with the knowledge and skills in facilitating these patients who require a holistic type of care approach whereby they can also incorporate therapeutic counselling which has been found to be effective in bringing down the negative psychological symptoms and improve the quality of life of women suffering from infertility.

**Nursing Education**

Findings from the study will enable the nurse managers and educators to educate the nurses working in reproductive clinics to give due priority to the psychological aspect of patients with infertility. They can be encouraged to be sensitive about the issues identified in the study. Furthermore nurse educators can incorporate models of counselling into the nursing curriculum which can help students to enhance their counselling skills while dealing with such vulnerable patients.

**Nursing Practice**

The findings of this study suggest that the quality of life among women with primary infertility is affected and anxiety and depression prevails in varying degrees. These resultant emotional reactions can in turn give rise to a vicious cycle of psychosexual problems, reduced pregnancy rates and obstetric outcomes. Nurses working in reproductive or infertility clinics can play a major role in averting such untoward outcomes of infertility problems. The investigator feels that nurses working in such specialized areas need to develop additional training to enable them to provide more structured psychological care; as such individuals are extremely vulnerable and require extra measures on the part of the nurse to understand them. They can work diligently to help execute treatment plans by aiding patients in scheduling appointments and instructing patients on how to administer medications as patients often are at a loss in understanding and complying with the treatment schedule. Nurses need to learn the art of incorporating all aspects of quality of life in taking care of women with infertility with special attention to the emotional domain which may particularly deteriorate their quality of life. Nurses can facilitate in their emotional well-being and play an important role in supporting patients through the complex journey of infertility; from infertility diagnosis to treatment to pregnancy.

**Nursing Research**

Further research is required to explore the effectiveness of nursing care in alleviating anxiety and depression and improving the quality of life of women with primary infertility. An in-depth study can be done to assess the patient’s self-esteem, presence of marital conflict, social disharmony and stigma attached these infertile women which can adversely affect the quality of life of these women and increase their anxiety and depression levels.

**Suggestions for Future Research**

• Replication studies can be conducted with larger samples to validate the findings.
• Replication studies can be conducted for all the available samples.
• An in-depth qualitative study can be done to explore the lifetime experiences of infertile women.
• A study can be done to assess anxiety and depression after failure of assisted reproductive treatment among patients experiencing infertility.
• A comparative study can be done to assess the relationship between anxiety, depression and quality of life among primary and secondary infertility women.
• A comparative study can be done to assess anxiety, depression and quality of life among infertile male and female couples.
• A qualitative study can be carried out to assess self-esteem and marital conflict issues of women with infertility.
• A study can be done to assess the perception of infertile couples towards surrogacy and adoption.

**Recommendations**

• Staff nurses can be sensitized regarding the issues women with infertility face in order to provide a holistic care.
• Nursing assessment checklist can be made available to screen for women or couples to detect psychological manifestations because of negative impact of infertility.
• Professional nurse counsellors can be made available so that psychological impact of infertility is taken care of.
• Counseling can be specified according to the type of treatment each woman receives.
• Proper referrals can be made when clinical anxiety or depression are identified/diagnosed.
• Peer support group can be made available at the reproductive medicine unit to share their experiences.
• Family of the couple can be included in the counselling process.

**Limitations of the Study**

• Study was limited to primary infertility women.
• All women who met the inclusion criteria could not be included in the study as only one sample was observed at a time.
• Mode of treatment (medical/surgical) and previous treatment failures could influence the outcome variables.
• Only those participants who could read and understand Hindi and English were included in the study.
CONCLUSION

The present study findings brings to light that women who are infertile need psychological support in order to overcome difficulties that they experience in their day to day lives. The study proposes that physicians and nurses be aware about anxiety-depression disorders among infertile women and the necessity of referring patients to psychosocial counsellors who provide professional infertility counselling. Moreover, health teams may provide a routine counselling to understand the factors contributing to anxiety-depression and quality of life among the women with primary infertility. Thus, counselling may help them to cope with the negative feelings especially when their treatment duration is prolonged. Finally, comprehensive qualitative and prospective studies should be conducted in order to examine further the effects of infertility on mental health and quality of life for infertile women.

Reference


Manna, N., Pandit, D., Bhattacharya, R., & Biswas, S. A. A community based study on Infertility and associated socio-demographic factors in West Bengal, India.


practice. Journal of Psychosocial Nursing & Mental Health Services, 42(3), 40

How to cite this article:

******