Chapter I:
INTRODUCTION
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Introduction

Infertility:

Infertility has been recognized as a public health issue worldwide by World Health Organization. (WHO). Supreme court has recognized, the right to reproduce as a basic civil right. (Jacky Boivin 2010).

Reproduction has been the essence in the continuity of human race since the beginning of the history. Most of the married couples in India wish to become parents and they feel they will be able to do so, by the biological route, whenever they wish to. These couples tend to become depressed, angry on their fate, frustrated, feel guilty and blame their destiny, if fertility fails. Millions of couples are affected by the problem of infertility each year. Infertility is considered as a life crisis affecting a couple’s self-esteem, personal relationship, health and wealth as well.

Definitions:

Infertility can be defined as the inability of a couple to achieve conception or to bring a pregnancy to a term after a year or more of regular unprotected intercourse. (WHO 2006).
Types of Infertility:

**Primary Infertility:** It is defined as the percentage of never pregnant women exposed to the risk of pregnancy for the last two years without conceiving. (WHO 1991).

**Secondary Infertility:** It is defined as one where a couple previously conceived but was unable to conceive subsequently despite cohabitation and exposure to pregnancy for a period of two or more years. (WHO 1991).

Magnitude of Infertility in India:

Globally infertility affects 50-80 million couples at some point in their reproductive lives. (UNFPA 1999). It affects approximately 8-10% of couples worldwide.

Incidences of Infertility in Various Countries of the World

*Figure No.1: Showing the incidences of Infertility in Various Countries of the World*

<table>
<thead>
<tr>
<th>Countries</th>
<th>Incidence in Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.A</td>
<td>21,59,230</td>
</tr>
<tr>
<td>U.K</td>
<td>4,43,166</td>
</tr>
<tr>
<td>Germany</td>
<td>6,06,063</td>
</tr>
<tr>
<td>Russian</td>
<td>10,58,632</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>1,89,676</td>
</tr>
<tr>
<td>China</td>
<td>95,50,349</td>
</tr>
<tr>
<td>Japan</td>
<td>9,36,272</td>
</tr>
<tr>
<td><strong>India</strong></td>
<td><strong>78,31,401</strong></td>
</tr>
<tr>
<td>South Africa</td>
<td>3,26,826</td>
</tr>
<tr>
<td>Australia</td>
<td>1,46,420</td>
</tr>
</tbody>
</table>

Source: Nation Wide Health Information Centre-2007
The census of India 1981, estimated infertility to be approximately 4-6%. Based on the census reports of India (2011, 2001, 1991, 1981), out of 250 million individuals attempting parenthood, 13 to 19 million couples at a given time are likely to be infertile. The census reports also shows that infertility has increased in India by 50% since 1981.

India accounts to 5-10 million of infertile couples and the number increases at the rate of 5% every two years. (Nagaraj, 2000). The WHO epidemiological studies (2006) showed that 3% of primary infertility and 8% of secondary infertility is prevalent in India.

**Causes of Infertility**

The three main causes of Infertility are

- Female Factor Infertility
- Male Factor Infertility
- Unexplained Infertility
Figure No.2: Showing the three main causes of infertility

**Causes of Infertility**

- Female Factor Infertility
- Male Factor Infertility
- Unexplained Infertility

Source: Bobab, 2000

The causes of female infertility are tubal factor, tuberculosis, ovarian factor and many more. Causes for male factor infertility are accessory gland infection, primary idiopathic testicular failure, idiopathic low motility, varicocele, immunological factor and etc.

Other factors that can be termed as the cause of infertility are lack of understanding of the reproductive biology, obesity, exposure to radiation, exposure to various toxic agents, age of a woman, sedentary lifestyle and so on.

**Investigations and Treatments:**

Couple though cannot conceive naturally, delays in going to a doctor for medical advice, with a fear of final diagnosis, which may result into physical and psychological discomfort.

There are many treatments available for infertility and some of them are as follows:
• Medicines to improve Fertility: These are sometimes used alone, but can also be used in addition to assisted conception.
• Surgical Treatments: This kind of treatment is mainly done to find the cause of infertility, which helps in deciding the treatment to be given to the infertile couple.
• Assisted Conception: This includes various assisted reproductive techniques like intrauterine insemination (IUI), in-vitro fertilization (IVF), gamete intralFallopian transfer (GIFT), intra-cytoplasmic sperm injection (ICSI) and many others. These are the most advanced form of treatments but in India IUI and IVF/ICSI are more commonly used.

**Intra Uterine Insemination (IUI)**

*Figure No.3: Showing the procedure of Intra Uterine Insemination (IUI)*

Intrauterine insemination (IUI) is a process in which the sperm is placed into a woman's uterus during her ovulation. This procedure is basically used for couples with unexplained infertility, minimal male factor infertility, and women with cervical mucus problems. IUI is often done in conjunction with ovulation-stimulating drugs. IUI can be performed using the husband's sperm or the donor's sperm. The sperm is washed in the andrology laboratory and then inserted using a transfer catheter.
In Vitro Fertilization (IVF)

In vitro fertilization (IVF) is a process by which an egg is fertilized by the sperm outside the body: in vitro (“in glass”). The process involves monitoring and stimulating a woman’s ovulatory process, removing ovum or ova (egg or eggs) from the woman's ovaries and letting sperm fertilize them in a fluid medium in a laboratory. The fertilized egg (zygote) is cultured for 2–6 days in a growth medium and is then implanted in the same or another woman's uterus, with the intention of establishing a successful pregnancy. In a layman’s language this is also known as test tube baby.

Figure No. 4: Showing the procedure of In Vitro Fertilization (IVF)
It is a very complex process to understand the term stress. It is equally difficult to define it. Tom Cox (1985), a very famous researcher had rightly said, "the concept of stress is elusive because it is poorly defined. There is no single agreed definition in existence. It is a concept which is familiar to both layman and professional alike. It is understood by all when used in general context but by very few when a more precise account is required and this seems to the central problem."

According to American Psychological Association (APA), "stress can be a reaction to a short-lived situation, such as being stuck in traffic or it can last a long time if you are dealing with relationship problems, a spouse's death or other serious situations. Stress becomes dangerous when it interferes with your ability to live a normal life over an extended period. You may feel tired, unable to concentrate or irritable. Stress can also damage your physical health."

**Definitions:**

General Definition, "Stress is simply a reaction to a stimulus that disturbs our physical or mental equilibrium."

Wikipedia, “In psychology, stress is a feeling of strain and pressure.”
Steinberg and Ritzman (1990), "Stress can be defined as an under load or overload of matter, energy or information input to output from, a living system."

Levi (1996), "Stress is a cost by a multitude of demands (stressors) such an inadequate fit between what we need and what we are capable of, and what our environment offers and what it demands of us."

Stress is an omnipresent part of the life and it gives rise to a fight or flight response, causing hormones such as adrenaline and cortisol to surge through the body.

Stress is caused either by our internal factors, that is, our own perceptions or by the external environment. Stress can be positive as well as negative. Positive stress is known as eustress which is a good stress and motivates a person. Negative stress is a bad stress, also called distress which can harm a person. In a way it is a threat to a person's quality of life. Responses to stress differ from one individual to another.

**Theory of Stress:**

Hanes Selye in the year 1936 developed the General Adaptation Syndrome known as ‘GAS’. Though an old theory but is still accepted by all. This theory helps in better understanding of stress response and it also conveys the fact that aging and disease are caused by chronic exposure to stress.

Selye has observed that the body adapts to external stressors in terms of biological patterns, so that the homeostasis of the body is maintained. According to him the hormonal system of the body releases hormones to combat stress immediately.

According to him the ‘GAS’ has three phases:

1) The Alarm Stage: This is the immediate response of the body to stress which acts as a threat or danger and stress hormones of the body like adrenaline, cortisol and noradrenaline are released which makes a person do certain
activities which they do not usually do. This stage is usually the stage of fight or flight response.

2) The Resistance Stage: In this stage the body’s defense becomes weaker. Even in the second stage if the stressors persist, the body has to fight with them continuously but it wouldn’t be as strong as the initial phase.

3) The Exhaustion Stage: Stress overload leads to this stage, wherein the adaptive energy of the body drains out completely. This stage can lead to various health problems, if not resolved immediately.

Another theory of stress known as the cognitive activation theory of stress was given by Holger Ursin and Hege R Eriksen (2002). According to CATS, the term ‘stress’ is used for four aspects of ‘stress’, stress stimuli, stress experience, the non-specific, general stress response, and experience of the stress response. The stress response is a general alarm in a homeostatic system, producing general and unspecific neurophysiological activation from one level of arousal to more arousal. The stress response occurs whenever there is something missing, for instance a homeostatic imbalance, or a threat to homeostasis and life of the organism. Formally, the alarm occurs when there is a discrepancy between what should be and what is—between the value a variable should have (set value (SV)), and the real value (actual value (AV)) of the same variable. The stress response, therefore, is an essential and necessary physiological response. The unpleasantness of the alarm is no health threat. However, if sustained, the response may lead to illness and disease through established pathophysiological processes (‘allostatic load’). The alarm elicits specific behaviors to cope with the situation. The level of alarm depends on expectancy of the outcome of stimuli and the specific responses available for coping. Psychological defense is defined as a distortion of stimulus expectancies. Response outcome expectancies are defined as positive, negative, or none, to the available responses. This offers formal definitions of coping, hopelessness, and helplessness that are easy to operationalize in
man and in animals. It is an essential element of CATS that only when coping is defined as positive outcome expectancy does the concept predict relations to health and disease.

**Infertility and Stress.**

*Figure No.6: Showing an infertile couple under stress*

Infertility patients experience stress, as they are unable to conceive naturally and they know that to bear a child they have to undergo medical treatments or procedures, whether they wish to or do not. The couples experiencing infertility face the loss of their genetic continuity which stresses them a lot. A diagnosis of infertility itself causes a lot of stress.

Each couple has a unique experience about infertility as their stress levels differ. These levels of stress are based on their own personality and the life
experiences that they have had. The physical, emotional and financial stress faced by such couples can even have a negative impact on their relationship.

**Stress and IUI and IVF:**

![Figure No.7: Depicting a couples stress under infertility treatment](image)

Couples undergoing the treatments of IUI and IVF face a lot of stress. There are many factors that lead to stress in such couples.

IUI as well as IVF include many trans vaginal sonograms every now and then, leading a woman in an awkward condition. The day of the very first sonogram to check the follicle growth is extremely stressful for them. These treatments include taking hormones either through injectable or orally, which may result into many side effects like headache, nausea, hot flushes and so on. These hormones even make the women have mood swings. The husbands have to masturbate to
produce the semen either in the laboratory or in the hospital or have to bring it from home within half an hour in a container, making them feel very embarrassed.

The regular visits to the hospital also disturb the routine of the couples. Their social life, personal life all gets disturbed. These treatments drain a couple financially too. The hormones taken by them are very expensive. In addition to that they have to undergo several blood and urine investigations which involve a lot of expenditure. Travelling to and fro from the hospital also adds on to the stress levels. Apart from all this, the hospital charges are also to be paid.

Such couples face a lot of unexpected challenges too. They have to face a lot of religious, social and moral issues especially for those who have to deal with the third-party reproduction, if their value system conflicts to make such a choice.

Even after undergoing so much, the doctors do not guarantee a successful pregnancy to these couples and this is the worst part of infertility treatments. These couples along with their family bounce between hope and despair. One minute they are full of hope and very optimistic that the treatment would be a success for them, the very next minute they become gloomy and pessimistic and feel what if it doesn’t work? At times these couples find themselves stuck in a maze.

Such couples undergoing treatments keep stressing about the stress. They keep worrying about not to stress themselves which stresses them all the more.

**Quality of Life:**

Quality of life is usually confused with the standard of living by people. Standard of living is primarily based on the income of a person, whereas standard indicators of QoL include environment, education, recreation, leisure time, social belonging, physical and mental health and wealth and employment.
**Figure No.8: Showing the areas that contribute to overall quality of life**

**Definitions:**

WHO defines QoL as, “individuals perception of their position in life in context of the culture and the value systems in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad ranging concept affected in a complex way by the person’s physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment.”

Ontario School Development Council (1997),”Quality of life is the product of the interplay among social, health, economic, and environmental conditions which affect human and social development.”
University of Toronto’s Qol unit, “The degree to which a person enjoys the important possibilities of his or her life.”

Wikipedia, “Quality of life is the general well-being of individuals and societies. Quality of life has a wide range of contexts including the fields of international development, healthcare, politics and employment.”

A systematic model of Quality of life is given by the University School of Social Work which includes various domains that contribute to the overall Qol of a person.

**Figure No. 9: Showing the systems model of quality of life**

**Theory of Quality of Life**

A quality of life theory developed from the Maslow’s developmental perspective says that the ‘quality’ is related to progressive satisfaction of hierarchy of needs. Maslow says that though different societies have different priorities about their need satisfaction, like the higher societies need to satisfy their higher order needs wherein the lower societies need to satisfy their lower order needs, the satisfaction of the needs according to their priorities shows improvement in the quality of life of that particular society.
**Qol and Infertility:**

Involuntary childlessness brings a lot of psychological distress in a couple, as a result impairments may arise in many areas of their life like their marital life, family life, economic stability and so on which has a direct effect on their quality of life. Qol of one partner influences the Qol of the other partner as the strain on the relationship is very high when they suffer from infertility. Apart from all these, even the far reaching effects of infertility can interfere with a couple’s Qol.

**Qol and IUI and IVF/ICSI:**

Couples who undergo the treatment of IUI and IVF face an emotional roller coaster ride. Factors that predict the quality of life of such couples depend on a number of factors such as the kind of treatment, the acceptance level of the couple, the gender differences and so on. These treatments involve a lot of emotional commitment. It consumes too much of time, money and energy and many a times a couple feels it may be their last chance to have a baby. All these things have an effect on their Qol as they experience many emotions like sadness, depression, anxiety and so on. They even have to face pressure from family and peers. Many a times the relationship between the husband and wife also gets affected.

When a couple is under treatment of IUI and IVF, expectations are at peak. They experience pressure from within and also from outside, which may affect their normal routine. It might become difficult for them to celebrate and enjoy.
Life Satisfaction

Figure No. 10: Showing the factors needed for life satisfaction

All human beings have certain goals in their lives and until and unless they attain or achieve these goals, they do not feel satisfied by their lives. Therefore, life satisfaction is the central aspect of the human welfare. The concept of life-satisfaction has two important words, one being Life and the other being Satisfaction.

What is Life?

Barlett (1986), “Life is what one’s thinking makes it, one makes it heaven or hell through one’s thinking.”

Oxford Dictionary (1990), “Life is a state of functional activity peculiar to organized matter and especially to the portion of it such as, constituting on animal or plant before death.”

What is Satisfaction?

It is a Latin word which means to make or to do enough.

Webster’s Dictionary of English Language (1977), “act of satisfying or state of being satisfied, contentment in possession and enjoyment; and to satisfy is to
What is Life Satisfaction?

Life satisfaction is an overall assessment of feelings and attitudes about one’s life at a particular point in time ranging from negative to positive. It is one of three major indicators of well-being: life satisfaction, positive affect, and negative affect (Diener, 1984).

Telman and Unsal (2004), “Life Satisfaction generally implies the pleasure that one gets from his/her life.”

Life satisfaction is defined as a perception of being happy with one’s own life and a belief that one’s life is on the right track. To date, our understanding of how life satisfaction relates to youth outcomes is limited, however a recent pilot study on a nationally representative sample of adolescents found that it is negatively related to outcomes such as substance use, depression, getting in fights, and delinquency and positively related to good grades (Lippman et al., 2012).

The evidences that are available suggest that life satisfaction is sensitive to the blocked goals(Diner & Diner, 1995; Lucas, Clark, Gorgellis& Diner, 2004), but it is unclear how long the effect lasts.

Theory of Life Satisfaction

The Whole Life Satisfaction Theory of Happiness says that the heart of happiness lies with one’s own self, that is, how the conception of their life is going on. According to this theory everyone has their own idle-life plans, that is set of goals, out of which some are fulfilled in the past and some will be fulfilled in the future. The plans that we have for fulfillment of our set goals are termed as ‘idle life plans’. The theory is completely based on how we predict to fulfill these
plans of our lives. There are many alternatives to the Whole Life Satisfaction Theory of Happiness which are as follows:

1) Cognitive Whole Life Satisfaction Theory
   This means being happy in one’s cognitive state. A person will only be happy when things are going according to his/her set life plan.

2) Affective Whole Life Satisfaction Theory
   This is different from cognitive whole life satisfaction theory which states that happiness is a positive affective life based on one’s conception of life.

3) Hybrid Whole Life Satisfaction Theory
   This requires both, cognitive judgment as well as positive affective state based on that judgment.

Figure No. 11: Showing couple’s reaction when they are satisfied by their life
Infertility and Life Satisfaction:

Infertility is conceptualized as a barrier, can be temporary, to a goal that is highly valued. Research on individuals seeking medical help for infertility shows that the higher the infertility stress, lower the life satisfaction. (Abey, Andrews, & Halman, 1991). There are many factors that have an effect on one’s level of life satisfaction and one of them is the problem of infertility.

Life Satisfaction and IUI & IVF:

Couples undertaking the treatments of IUI and IVF have to invest a lot of their money and time to these treatments. Because of it, they have to compromise on a lot of other things in their life. They have to bring a lot of changes in their priorities, as their ultimate goal during the treatment remains to be parents. During this period, they even have to make many adjustments like, cutting down on their luxuries. The emotional distress that they face not only affects their social life but at times their personal relationships too. The levels of life satisfaction of such couples differ as it is completely based on their experiences and acceptance level about these procedures.

Sexuality:

There are many factors that make us a human and sexuality is a part of it. Sex is not only linked to procreate but is also about sensual pleasure. It not only connects a couple physically but also produces a sense of love, joy, care, affection and comfort in them. Sexuality is one of the basic needs of all humans, because of it a new generation is born. Human sexuality serves both psychological as well as spiritual purposes.

Sexual activity can be used to escape or remove the feelings of anxiety, sadness, rage, low self-esteem, loneliness, meaningfulness. At the same time, it can even be used to hurt people and humiliate them sadistically.
**Definition:**

The working definition of sexuality given by WHO (2006), "central aspect of being human throughout life encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction. Sexuality is experienced and expressed in thoughts, fantasies, desires, beliefs, attitudes, values, behaviors, practices, roles and relationships. While sexuality can include all dimensions, not all of them are always experiences or expressed. Sexuality is influenced by interaction of biological, psychological, social, economical, political, cultural, legal, historical, religious, and spiritual factors."

The sexual energy "libido" is present in all human beings since birth according to Sigmund Freud. It may be high or low during different developmental stages but it never totally disappears till a person dies.

Sexuality is inherently different for males and females. Men can separate it from the feelings of love and romance, whereas for women both go hand in hand. Females are mostly focused on one sexual partner while males can be monogamous. Men see sex as something that they can never get enough of and so, these differences are a source of misunderstanding between both these sexes.

To conclude, we can say that sexuality is a part of fate and it is up to humans whether they use it in a creative manner or destructive manner. Human sexuality is also influenced by family and culture.

**Theory of Sexuality:**

Masters and Johnsons (1966) have given the famous theory of sexuality which talks about the four phases of human sexual response, The first phase is called the excitement phase, even known as the initial arousal stage. The second phase is called as the plateau phase where the person experiences full arousal but not yet got the orgasm. The third phase is the orgasm phase and the fourth and final phase termed as the resolution phase, experienced after orgasm.
Their findings also revealed that men undergo a refractory period following orgasm during which they are not able to ejaculate again, whereas women do not experience the refractory period: this makes women capable of multiple orgasms.

**Sexuality and Infertility:**

Infertility not only increases the levels of stress in a couple but also dampers their sexuality. Even the most sexually active couple can be de-sensitized going through a fertility work-up. A new study from Stanford University revealed that 40% of infertile women suffered from sexual problems that caused distress, compared to 25% of a control group of healthy women.

*Figure No. 12: Showing the loss of interest in sexual activity among infertile couples.*

The hope of getting pregnant is coupled with depression at times leading to loss of libido. Infertility also affects the performance level as it takes out spontaneity out of sex. Making an attempt to get pregnant, means to have intercourse on the right day.

Infertility also takes privacy out of sexuality. From closed doors of the bed room, it comes out as a form of discussion in a clinic with the doctors, wherein questions regarding positions etc. are asked. At times a couple feels that a doctor is literally watching their performance live.

Couples sometimes unconsciously sacrifice a month of trying mid-cycle as it gives them a sense of relief, that at least they won’t face a failure. Mid-cycle conflict increases, resulting in reducing the sexual satisfaction.
Infertility even is a blow to men’s sexual identity if it is male factor infertility and to a woman’s sexual identity if female factor infertility persists. Feelings of low self-esteem, guilt and worthlessness increases and the interest to have and enjoy sex are lost.

**IUI & IVF and Sexuality:**

![Image](image.png)

*Figure No. 13 & 14: Showing loss in sexual satisfaction among couples undergoing the treatments of infertility*

The treatments of infertility take a toll on a couple’s sex life and their sexual desires irrespective of the cause of infertility. Medical treatments can take on a couples intimate lives and on their sexual self-esteem.

Pamela Fwcett Pressman, a licensed professional counselor said, “Intercourse doesn’t feel nice when it is associated with the trans vaginal ultrasound you had earlier in the day.” These treatments also discourages intercourse a few times, one and the most important being, when the male partner is asked to produce
the semen, an abstentious of 2-4 days is required to get optimal semen sample. Because of this, a couple can’t have intercourse even if they get an urge.

Dr Melissa Esposito, Shady Grove Fertility says that there is nothing unsafe about having sexual intercourse during IUI and IVF but the women may experience enlarged ovaries, which may make the intercourse uncomfortable for a woman. According to her having sex following IUI will benefit a couple, and they may be encouraged to have intercourse the evening after insemination. This again removes the spontaneity.

Jody Lynee Maderia, Associate Professor in the Indiana University Maurer School of Law said, “Women undergoing IVF report much lower scores in sexual interest, desire, orgasm, satisfaction and sexual activity and overall sexual satisfaction.” In addition to it, she even has told that sex becomes mechanical and enforced: a means to end rather than a source of pleasure.

The present research is done keeping these psychological factors into consideration, as not much of the studies have been done on it in India. The current research focuses on infertility related stress experienced by couples under the treatments of infertility (IUI or IVF) and whether this stress has an effect on the couples quality of life, life satisfaction and sexuality.

An extensive review of literature mentioned in the next chapter was done before the research study was initiated.