Chapter II

REVIEW OF LITERATURE

Review of Literature is an essential part in the development of a research project. It includes both research and non-research literature. The retrieval of literature relevant to this study, was done from published articles, research articles, Medline and Internet, Journals, books and other related materials.

Leary (2004) said that review of literature helps to relate the findings from one to another with a view to develop a comprehensive body of scientific knowledge in a professional discipline from which valid and pertinent theories may be developed.

The literature related to the study are organized under the following headings.

1. Incidence of infertility
2. Emotional reactions in women with infertility.
4. Effect of infertility on psychosocial well being and quality of life of women with infertility.
5. Efficacy of counseling, relaxation therapy and support system for women with infertility.
6. Effect of counseling and relaxation therapy on viable pregnancy.
1. Incidence of Infertility

Seshadiri (2011) defined infertility as the failure to conceive after one year of unprotected sexual intercourse.

Dutta (2008) defined infertility as a failure to conceive within one or more years of regular unprotected coitus.

Schmidt (2006) stated that, clinically, a couple is considered to be infertile after at least one year without contraception and without pregnancy.

Johnson (2003) stated that infertility is said to exist when a pregnancy has not occurred after at least one year of engaging in unprotected coitus.

According to 2013 World Bank estimate, the drop in infertility started about 10 years ago in India, with a steady 17% decline from the year 2000.

Malhotra (2013) stated that it is believed that 10% of the general population suffers from some form of infertility in India.

Mahesh (2013) quoted that a Pharmaceutical Company conducted a survey in nine Indian cities- Kochi, Agra, Hyderabad, Bangalore, Chennai, Kolkatta, Delhi, Mumbai and Ahmedabad and the total sample was 2,562 people. The results showed that nearly 46% of people was found infertile.
Results from another parallel survey conducted among 100 infertility specialists showed that nearly 63% of infertile couples belonged to the childbearing age (31-40).

Pai (2010) expressed that 30 million couples in India suffer from infertility, making the incidence rate of infertile couples at 10%.

Cwiek, wozniak, Fryc, Grochans and Rygielska (2009), in his study on self-care and demand for social support in women with infertility, expressed that the prevalence of infertility among married couples is growing. It is estimated that every fifth married couple in Poland is infertile.

Ombelet, Cooke, Dyer, Serous and Devroey (2008) focused the point that Worldwide, more than 70 million couples suffer from infertility, the majority being the residents of the developing countries.

Barua, Apte, Paude, Walia and Wischmann (2005) quoted that according to WHO, the national prevalence of primary and secondary infertility in India is three and eight percent respectively.

Barua, Wischmann, Stammer, Scherg, Gerhard and Verres, (2005) indicated that as per Mumbai slums survey, the prevalence rate of childlessness rate was 4.54 %.
John (2004) stated that despite having so many family welfare programmes, population explosion is still a problem, which our country is facing even now. At the other extreme end, the infertility is also a problem affecting approximately 10% of the couples in India.

Lashen (2004) stated that with the population of India at over one billion, the number of infertile couples could be well over 20 million: much more than the entire population of Australia and New Zealand.

Lashen (2004) expressed that infertility affects 9% to 14% of couples of whom 70% suffer from Primary infertility and 30% secondary infertility.

Hart (2002) stated that infertility affects 6 million American Women and their Partners, about 10% of the reproductive age population.

According to the National family health survey (2000), in India, 3.8% of women aged between 40 and 44 were reported to be childless.

Demographic and Health Survey (2000) revealed the incidence of Primary infertility. In Sub-Saharan African countries, like Togo the incidence was 23.5%, in Ghana it was 19.2% and in Camoros it was 18.1%. In West Asian countries, like Morocco the incidence was 42.2% and in Turkey it was 33.1%. In
South East Asian countries, like Kazakhstan it was 16.8%. In Cambodia, it was 11.7%, in Nepal it was 12%, in India it was 11.8%, and in Indonesia it was 10.2%. In Latin American countries like Colombia it was 20.7%. In Haiti it was 18.8%, in Brazil 18.3% and in Peru it was 15.7%.

Smith et al., (2009) conducted a study to identify the sexual, marital and social impact of a man’s perceived infertility diagnosis in San Francisco, The United States of America. This was a cross-sectional study with 357 men with infertility, from eight academic and community-based fertility clinics. Participants completed the written surveys and face to face and telephone interviews. Among 357 men, no male factor was reported with 47%, isolated male factor was present with 12%, combined male and female factors were present with 16% and an unexplained infertility was present with 25%.

Porter and Bhattacharya (2008) conducted a study in Aberdeen Maternity Hospital, United Kingdom. This was a prospective study and the author used semi-structured interview to collect data. The age group of the sample was women between twenty two to forty one years. On assessment of the causes of infertility among the total sample, it revealed that the unexplained infertility constituted forty one percent.

Sundby (2007) conducted a study, in Norway, to identify the consequences of in-vitro fertilization among women under 10 years
post-treatment. The data collection was done using a questionnaire. He concluded that between 2.1% and 4.2% of all children born in Scandinavian countries were conceived with the help of assisted reproductive technology.

Malhotra (2004) stated that among 35% of couples the reason for infertility lies with the male partner. Among 35% cases the female factors are responsible, among 20% couples it is a combination of both and, finally, among 10% cases the cause of infertility is idiopathic.

Mahajan (2004) stated that idiopathic infertility is defined as the inability of a couple to conceive in the absence of any detectable abnormality.

Lashen (2004) indicated that idiopathic infertility causes great distress to couples, who often find it harder to bear when a cause cannot be found. Many infertile women on whom no such organic defect can be discovered whose emotional disturbances may be acting to prevent conception.

Wischmann, Stammer, Scherg, Gerhard and Verres (2001) conducted a study to identify the differences in psychological characteristics between the couples with fertility disorders, especially idiopathic infertility and a representative sample. He pointed out that 27% of the sample was with idiopathic infertility.
2. Emotional reactions in women with infertility

Fledderjohann (2012) conducted a study in Ghana, West Africa to explore the implications of infertility for women. He conducted a semi-structured interview to collect data from 107 women seeking treatment in Gynaecological Clinics. Based on iterative open coding of the interviews, the focus of the analysis is on mental health, marital instability, social interaction and gendered experiences. The results showed that the infertile women faced severe social stigma, marital strain and a range of mental health difficulties. Many women feel that they shoulder a disproportionate share of the blame for infertility and by extension, face greater social consequences than male partners for difficulties of conceiving.

Schmidt (2010) stated that for many couples, infertility causes a serious strain on their interpersonal relationship, as well as personal distress, reduce their self-esteem, and a loss of the meaning of life. Besides being a medical condition, infertility is also a social situation. One of the important challenges, infertile couple faces, is learning how to manage the infertility and treatment in relation to oneself, with the partner and in the different social arenas family, friends and coworkers.

Covington (2009) stated that the Reproduction is considered to be the most basic of human needs, propelled by powerful biological and psychological drives. When the ability to reproduce
is thwarted, a crisis starts – the life long crisis of infertility. It is considered to be an emotionally difficult experience that causes impact on all aspects of a couple’s or an individual’s life: relationships with others, life goals, social roles, self-image, self-confidence, and sexuality, to name a few. The losses associated with infertility are multifaceted, including the loss of hopes, dreams, future plans, marital satisfaction, self-esteem, sense of control, belief in the fairness of life, health and well-being and most important, the ‘dream child’. Further, these losses evoke the feelings of grief – shock, disbelief, sadness, anger, guilt, blame, and depression – which occur in a repetitive and predictable process as the patients move through medical diagnosis and treatment. Infertility is an emotionally exhausting and psychologically demanding experience.

Fatoye Fo (2009) conducted a study in Nigerian teaching hospital to identify the psychological profile of spouses of women with infertility. Ninety five men, who accompanied their wives to the fertility clinic were compared with 95 matched controls, using the Hospital Anxiety and Depression Scale (HADS). Their rates of significant anxiety symptoms (24.2%) and depressive symptoms (20.0%) were higher than the corresponding rates of 13.7% and 9.5% for the controls. The higher rate of significant depressive symptoms in the infertility group was significant (P<0.05).
Wischmann, Scherg, Strowitzki and Verres (2009) stated that, in the majority of cases, involuntary childlessness has a strong impact on the emotional situation of infertile couples. Many women consider infertility as the most serious emotional crisis of their life.

Shakhar (2009) stated that couples will often grieve their lost parenthood, lost child, lost dream and their lost sense of control. Each unsuccessful cycle is perceived as a loss. Grieving is a normal response to this loss. But, unlike losing a child, the couples do not have memories to stick to and their grief is not acknowledged by society. They are often left alone and what they are going through, sometimes is kept secret. Even when they decide to share, others often fail to recognize what this loss means to them.

The grieving process is characterized by intense fluctuations in emotions ranging from crying to laughing to being angry. Many couples are surprised by the intensity of their mood swings. They are, usually, not aware that this is a normal response to the loss. It is important to assure them that their reaction is normal and common. There is no single way to grieve. However, there are various stages through which people undergo experience with differences their order, and the amount of time spent in each stage.
Menning (2009) focussed a list of stages based on his work as a counselor with infertile couples:

- **Denial, shock and numbness:** This stage usually appears even before the first visit to a clinician. It is characterized by disbelief. Couples do not believe that this can happen to them. Although it may seem as if they don’t care, this is definitely not the case.

- **Anger:** Couples are angry at the situation. They may experience a strong yearning for pregnancy, for a child, for parenthood. They feel that the situation is unfair. This anger can focus on the treatment, the tests, and the inconvenience associated with the procedures they need to undergo. It can also focus on the perceived social pressure from their family and friends and on comments they received about their childlessness. Social support and respect can help diminish this anger.

- **Isolation:** Many couples exhibit social withdrawal. It can be the result of their efforts to keep their infertility and treatments’ secret; it can be because they do not want to be judged by others, or because they want to avoid meeting children or pregnant woman. Many feel that only couples who face infertility can identify with what they are going through. Family and friends may also contribute to this withdrawal by refraining from speaking about the subject – either because they do not want to hurt the couple or because they do not want to invade the couple’s privacy.

- **Guilt:** The couple, especially women, may feel that their infertility happened to them because they did something wrong.
Depression: Couples may feel that they cannot take it any more. They cannot live without a child and that treatment is too demanding. They may feel very lonely.

Rebuilding and healing: If treatment does not produce a child, couples may need to deal with the reality of the situation. They will need to restructure the event, organize their activities and plan to move forward in life. Resolution is not possible until couples decide to end treatment or choose alternative ways of having children.

Shakhar (2009) stated that how badly the infertility would affect the couple’s life depending on the social support system they have, on their personality, on the strength of their marital relationship, and on how tolerant their environment is. Still, the longer infertility lasts, the more devastating its effect will be. Society frequently fails to realize how much grief childlessness can carry. Family and friends often do not grasp that infertility can be as emotionally challenging as life-threatening diseases like cancer and HIV. Even when families are sympathetic and supportive, their comments can hurt or be perceived as insensitive. In addition, couples may feel pressured to have a child to satisfy their family. Holidays and family gatherings may be the difficult times. They may force the couple to face pregnant women and children, reminding them of their pain and unsuccessful trials.

Many couples with infertility problems report being jealous and feeling inadequate when meeting other pregnant women or
couples with children. They may be frustrated and feel that life is unfair. They may feel guilty for having negative feelings such as jealousy. It is important to help couples realize that these are normal and common reactions. Women often feel pressure to have a child. As a result they may become preoccupied with becoming biological parents. They will do almost everything to have a child. This can go on for long periods, changing doctors and undergoing many invasive therapies. They may feel that there will be no joy in life until they accomplish this goal (Shakhar, 2009).

Shakhar (2009) stated that although the couple should be viewed as a single unit in the treatment, men often perceive infertility and respond to it differently than women. They may be less motivated and less distressed. Men also tend to cope differently than women: Women want to talk about what they feel while men are more reluctant; women are more open to discuss the subject with others while men often share the experience only with their wives; women frequently take the active role and do some research while the men try to remain calm and rational. Some men feel that their wives respond very emotionally and they try to be the ones in control. Part of the effect of infertility on men is mediated through its effect on their wives.

Men may feel very lonely because they do not express their grief and are less likely to talk about what they are going through. They may find themselves in a delicate position: Experiencing a
crisis and at the same time feeling that they need to be strong to emotionally support their wives. Some do not realize that their wives want to know that they are grieving besides they are affected by the situation. New emotions towards each other may appear. Two common feelings are guilt and fear, especially, among women, in more traditional societies. Some feel that they cannot provide their husbands a family and have the fear that they would leave them. Sometimes, they even propose to their husbands to leave them and find another woman who will give them a child. Even when the husbands reassure them that they did not marry them simply to have children, they find it hard to accept (Shakhar, 2009).

Shakhar (2009) also expressed that Infertility can increase the sexual discontentment. The increased demand to have sex at certain times can ruin the joy of sex. Not being in the mood or being away on business trips can increase the tension between the couples.

Whether the man or the woman diagnosed with infertility makes a difference. If only one partner is deemed infertile, this partner, usually, suffers from a greater loss of self esteem, shame and a sense of sexual inadequacy. Women also, often, feel less accepted by their in-laws. If males are diagnosed, it can lead to impotence leading to a greater sexual concern.
Shakhar (2009) further stated that there is no uniform description of what couples with infertility face. There is no one experience shared by all couples, and infertility is not a static state but a dynamic process. Even the apprehension that there may be a problem is a process and not a sudden realization. The psychological and behavioural effects of infertility vary over time and depend on the duration of infertility and the stage of the treatment. The process is not linear. Many clinicians often describe it as a roller coaster of raised hopes followed by tragic disappointments. This implies that what couples cope with and feel at one point can be very different than what they experience even a week later. This is very normal.

Infertility disturbs many aspects of life. It can lead to depression, anger, and anxiety. It may make couples feel defective, introduce guilt, and lower their self esteem. It can raise a sense that life is unpredictable and is not under control. It can lead to marital and sexual problems. Infertility can cause couples to distance from the “fertile” world and avoid friends with children or attend family gathering (Shakhar, 2009).

Libraro (2009) stated that infertility, and its treatment, place considerable emotional demands on the patient and the couple. While infertility itself is recognized as a ‘life crisis,’ provoking a variety of emotional responses.
Levy, Brizendine and Nachtigal (2006) stated about Grief reactions: The “loss of a child never conceived generally goes unrecognized but has psychological consequences. Both partners can feel:

- Low self esteem
- Sadness about being unable to experience parenting
- Doubts about their femininity or masculinity
- Regret over unfulfilled dreams.

These feelings can be exacerbated by well-meaning relatives and friends who offer misguided advice such as, “Just relax,” or “Quit your job; then you will get pregnant” Couples might begin to resent relatives and avoid family gatherings, especially, if they anticipate being questioned about children. They might become jealous of siblings who have children. Infertile women might begin to avoid social interactions.

Sexual activity: It is no longer pleasurable for many couples going through infertility treatments, and the loss of intimacy can strain the marriage. Sex becomes an obligation devoid of spontaneity, excitement, and enjoyment. Reglementation – such as physician advice about when should the couple have sex-can lead to sexual dysfunction.

Employment: Infertility treatments are time and resource-intensive, and patients often miss work. Even while on the job, a woman distracted by infertility or the side effects of treatment
might not perform as well as she could. Worries about job security add to her anxiety.

Finances: Infertility treatment is expensive and is not always covered by insurance. The American Society for Reproductive Medicine reports that the cost of an IVF cycle averages $12,400, and success rates are <50%. In 2003, the chances of delivering a living child following IVF ranged from 21% to 43% per cycle for women age <40 years. To continue treatment, couples may take second jobs, acquire loans, deplete savings, or accumulate debt. Many couples – even with extraordinary effort - cannot afford to start or continue advanced infertility treatments.

Spirituality: Patients who believe that infertility is God’s punishment for past sins may experience a religious crisis. Those affiliated with religions that restrict assisted-reproductive technology may feel forced to choose between doctrinal dictates and their dreams of becoming parents (Lelly, 2006).

Levy, Brizendine and Nachtigal (2006) observed that the patients rarely accept infertility with equanimity, and their responses include shock, denial, anger, isolation, guilt, and grief. Some women say the experience of being infertile feels comparable to having cancer.

The incidence of clinical major depression, poor self-esteem, and sexual dysfunction among women who undergo infertility evaluation does not differ significantly from that of their fertile
peers. Even so, infertile women report a roller coaster ride of emotions; hope as treatments are tried, despair when treatments fail. Health care providers can add to the angst by telling women that they have an "incompetent" cervix, "Poor - quality" or "old" eggs or "inadequate" mucus; these insensitive descriptions can lead women to blame themselves and feel ashamed, guilty and depressed (Lelly, 2006).

Widge (2005) conducted a study, in India, in 2 major cities, New Delhi and Mumbai. This study reported the social context of infertility and women’s perceptions and experiences with invitro fertilization. The total sample was 22 couples. Indepth interviews with the participants revealed that infertility is deeply feared, and women’s status and security were affected, and they experienced stigmatization and isolation. They viewed IVF process as the process, which is physiologically, emotionally and financially stressful. He concluded that in Indian society fertility defines womanhood and motherhood and infertility is stigmatized and also women faced a lot of pressures to produce a biological child.

Makheea (2005) stated that infertility is more traumatic for women as it is considered the essence of female role and identity. Thus, infertility can create feeling of physical and social inferiority that can overshadow all other personal and social values.

Barua, Apte, Pande and Walia (2005) conducted a community-based research study from 2001-2005 in Ahmednagar
district, Maharashtra in India. He stated that in a country like India, where childbearing is considered to be an essential role in life and a yardstick by which women’s worth is measured, infertility carried enormous social and emotional burdens.

Dhaliwal (2004) conducted a study in Chandigarh, India to assess the psychological aspects of infertility. It was a prospective study. The total sample was 120 couples with infertility. The sample constituted 30 couple with unexplained infertility, 30 with anovulation, 30 with tubal factors and 30 with male factor. The psychological assessments were done at initial period and at 3, 6, 9 and 12 months during the infertility work up. The results showed that psychological components were found to play a significant role in infertility of unknown etiology, especially, in the male partner. They affected the personality and social behavior of the male partner and caused anxiety, but let to depression in the female partner. In cases of organically caused infertility, partner were worried about the other’s reaction. Anxiety was significantly greater in the partner with the fertility problem than in the other partner.

Gynekol (2004) conducted a study in Prague to estimate the basic personality and couple-characteristics of men and women with infertility. The design used was descriptive study. Thirty eight couple applying for assisted fertilization were psychologically examined by standard psychodiagnostical methods. Men and
women from infertile couples displayed moderate abnormal behavioural characteristics, men from these couples are more nemotic than general population. Women displayed more anxiety and social desirability. Men from infertile couples are perceived by themselves as well as by their wives as less masculine.

Fido (2004) conducted a study in Kuwait to examine the psychological status of women with infertility. The total sample was 120 women with infertility. The tool used was Hospital Anxiety and Depression Scale (HADS). Compared with an age-matched Pregnant control sample. The infertile women exhibited significantly higher psychopathology in all HADS parameters in the form of tension, hostility, anxiety, depression, self-blame and suicidal ideation. Childlessness resulted in social stigmatization for infertile women and placed them at risk of serious social and emotional consequences.

Chen, Chang, Sai and Juang (2004) stated that depression and anxiety are highly prevalent among infertile women. It has been postulated that these psychiatric symptoms may either be the cause of infertility or the consequence of it, or both.

Ramezanzadeh et al., (2004) stated that Infertility sometimes is accompanied by existential crises and emotional tensions such as anxiety, interpersonal problems, and suppressed anger, unsatisfactory interpersonal relation, frustration, inferiority feeling, depression, rejected feeling and unconscious guilt feeling.
During the first three years, infertility is accompanied by signs such as anxiety, depression, loss of self-esteem, impotence and maladjustment of marital status. After 3 years, the optimistic attitude would change to despair and at last there will be some emotional changes to adopt a child or live without one, thereafter.

Having a child stabilizes the family and increases the marital satisfaction. In our culture and society, negative attitudes to infertility are so throbbing. Having a child is psychologically or affectively, a vital factor for women, and the absence of children may cause marital problems such as divorce or even second marriage, especially, in Islamic societies it is possible for men to marry with more than one woman. Intervention of relatives especially, husband’s family, negative attitude and behavior of surroundings (family friends, neighbors, etc.) cause psychological problems for infertile women. Generally, infertile women experience negative social consequences including marital instability, stigmatization and abuse. Infertility can have a serious effect on both psychological well being and social status of women in our country (Ramezanzadeh et al., 2004).

Mulgaonkar (2001) stated that infertility causes fear on women, their identity, status and security get affected and they experience stigmatization, isolation and a loss of bargaining power and empowerment in the family and society. It is a major source
of anxiety leading to lowered self-esteem and a sense of powerlessness.

Wischmann, Scherg, Strowitzki and Verres (2001) conducted a study to identify differences in psychological characteristics between couples with fertility disorders, especially, idiopathic infertility, and a representative sample. A total of 564 couples were examined using psychological questionnaires pertaining to socio demographic factors, motives for wanting a child, dimensions of life satisfaction, couple relationships, physical and psychic complaints and a personality inventory. The results showed that the infertile women showed higher scores on the depression and anxiety scales.

Conrad, Schilling, Cangenbuch, Haidl and Liedtkel (2001) in Germany, conducted a study and compared 84 infertile men with a group 96 healthy men and 43 male psychosomatic outpatients concerning their ability to communicate feelings, measured by the 20-item Toronto Alexithymia Scale and the amount of psychopathologically relevant symptoms, especially, somatization, measured by the symptom checklist 90-R and a list of complaints (Beschwerden-Liste). The results showed a significantly higher alexithymia in infertile men compared with healthy men (p<0.05). The importance of alexithymia in male infertility is discussed on the basis of empirical results that it might play a defensive role as
far as depression is concerned but on the other hand increases the possibility of somatic complaints.

Lee, Sun and Chao (2001) in China conducted a study to explore the experiences of Chinese men who were diagnosed as infertile. Thirty men who had experienced infertility were interviewed. The interviews were analyzed using content analysis. Five categories were generated from the interview data: emotional response after hearing the diagnosis, seeking possible explanations for the diagnosis, Stress from the discovery of the infertility secret by family, relatives, and friends, and grief for discontinuation of the family heritage. The results showed that men described infertility as a frustrating and stressful experience.

3. Stress and Coping among Women with Infertility

Donarelli, Coco, Gullo, Marino, Volpes and Allegra (2012) conducted a study, in Italy, to identify whether attachment anxiety and avoidance dimensions in female and male partners in couples seeking infertility treatment associated with her and his infertility related stress. It was a cross-sectional study. The total sample comprised of 316 females and 316 males. They filled the psychological Questionnaires (experiences in close relationships; Fertility Problem Inventory; state-trait Anxiety Inventory). Paired t-tests were used to examine gender differences on the study variables. Associations between infertility-related stress and the study variables were explored using hierarchial stepwise multivariate linear regression analyses. Attachment anxiety and
attachment avoidance were significantly associated with global infertility stress.

Omoaregba, James, Lawani, Morakinyo and Olotu (2011) conducted a study in Nigeria to determine the prevalence of psychological distress as well as its associated socio-cultural characteristics among women attending the infertility clinic of a tertiary hospital in Nigeria. The total sample was 100 women, with infertility. A semi-structured questionnaire was designed to record socio-demographic and clinical variables. The 30 item general health questionnaire was used to screen for psychological distress. The results showed that the prevalence of probable psychological distress was significantly higher among the infertile group compared with their fertile counterparts (P<0.001). The results revealed that the infertile women are more vulnerable to psychological distress and so they require psychological support.

Lykeridou, Gourounti, Sarantak, Loutradis, Vascamatzis and Deltsidou (2011) conducted a study to examine the association between (1) occupational social class and coping responses, (2) coping responses and infertility-related stress and (3) occupational social class and infertility-related distress. Cross-sectional survey design was used. The study involved 404 women undergoing infertility treatment at a public clinic in Athens, Greece. State and trait anxiety (State-Trait Anxiety Inventory), infertility-related stress (Copenhagen Multi-centre Psychosocial
Infertility) and coping strategies (Copenhagen Multi-centre Psychosocial Infertility) were measured. The results showed that women of low/very low social class reported higher levels of active-confronting coping compared with women of higher social class \((p < 0.001)\). A positive correlation between active-avoidance coping and both state and trait anxiety \((r = 0.278\) and \(0.233\), respectively, \(p < 0.01)\) was observed. The passive-avoidance coping scale was positively correlated with marital and personal stress \((r = 0.186\) and \(0.146\), respectively, \(p < 0.01)\). All the three kinds of stress (marital, personal and social) were positively correlated with both active-avoidance \((r = 0.302, 0.423\) and \(0.211\), respectively, \(p < 0.01)\) and active-confronting scale \((r = 0.150, 0.211\) and \(0.141\), respectively, \(p < 0.01)\). Infertile women of the lowest social class used more active-confronting coping and more passive-avoidance coping than women of the highest social class. Factors such as low social class and maladaptive coping strategies might contribute to infertility-related stress and anxiety.

Kjaer (2011) conducted a study in Denmark to investigate whether women who do not succeed in having a child after an infertility evaluation are at a higher risk of suicide than women who succeed in having a child after an infertility evaluation. It was a cohort study with 51,221 samples during 1973-1998. COX proportional hazards regression analyses was used to calculate Hazard Ratios (HRs). The results showed that women who did not have a child after an initial fertility evaluation had a >2 fold
(HR:2.43; 95% CI. 1.38-3.71) greater risk of suicide than women who had at least one child.

Louis (2011), in USA, conducted a study to assess the salivary stress biomarkers (cortisol and amylase) and female fecundity. It was a prospective cohort design. The sample constituted 274 women in the age group of 18 to 40 years. Women collected basal saliva samples on day 6 of each cycle. Alpha amylase concentrations were negatively associated with fecundity. (Fecundity odds ratio = 0.85, 95% CI, 0.67, 1.09). Statistically, significant reductions in the probability of conception across the fertile window during the first cycle attempting pregnancy were observed for women whose salivary concentrations of amylase were in the upper quartiles in comparison with women in the lower quartiles (highest posterior density: -0.0284; 95% interval – 0.540, -0.029).

Li (2011) conducted a study in China to explore the correlation among coping style, social support, and negative emotion in Chinese infertile women. The total sample constituted 211 infertile women. Participants completed Social Support Rating Scale (SSRS), Simplified Coping Style Questionnaire (SCSQ), Self-rating Anxiety Scale (SAS), and Self Rating Depression Scale (SDS). The results showed that the mean scores of SAS and SDS were 43.43 and 50.06 respectively. The SAS scores were negatively correlated to the scores of positive coping (P<0.01),
while positively correlated to the scores of negative coping (P<0.01).

Varvogil and Darviri (2011) stated that life exists through the maintenance of a complex dynamic equilibrium, termed homeostasis, that is constantly challenged by internal or external adverse forces, termed stressors, which can be emotional or physical in nature. Thus, stress is defined as a state of threatened or perceived by the individual as threatened homeostasis and it is re-established by a complex repertoire of behavioural and physiologic adaptive responses of the organism. Neuroendocrinic hormones have a crucial role in coordinating basic as well as threatened homeostasis; also, they intervene in pathogenesis of dyshomeostatic or cacostatic situations of disease.

The Stress System located both in the central and peripheral nervous system, generically activated whenever a threshold of any stressor is exceeded, plays a major coordinator role in the re-establishment of homeostasis by eliciting a complex behavioral and physical adaptive response. This response is defined as the stress syndrome and represents the unfolding of a relatively stereotypic, innate program of the organism that has evolved to coordinate homeostasis and protect the individual during stress Varvogil and Darviri (2011).

Broeck, Hooghe, Engzlin and Demyttenaere (2010) aimed to describe, explore and test a self-constructed conceptual framework
designed to understand the relative impact of infertility-specific and general psychological characteristics, in predicting psychological distress. Where they used validated self-report questionnaires that measured the concepts of the encompassing framework (personality characteristics self-criticism and dependency, attachment in the partner relationship, child wish, coping, intrusiveness, infertility-related stress and general psychological distress) were completed by 106 women and 102 men before starting the first IVF/ICSI treatment at a university hospital based fertility center. The data were analyzed by hierarchical multivariate linear regression analysis and path analysis. The results related to our study is the second level (coping) explained 50% of the variance in psychological distress (P < 0.001). Passive coping was a significant positive predictor whereas active coping and seeking social support were significant negative predictors with beta-values 0.61, 20.16 and 20.16, respectively. A path analysis confirmed the framework and highlighted the mediating role of coping and intrusiveness. No significant differences were found when comparing responders to non-responders concerning age, type of infertility, marital status, female and male medical pathology and duration of infertility.

conclusions: The current study of patients starting IVF-treatment demonstrated that general psychological characteristics, specifically active and passive coping, personality characteristics, dependency and self-criticism and intrusiveness, are more
important in predicting the variability in psychological distress than infertility-specific concerns.

Klemetti (2010) conducted a study in Finland, to examine mental disorders, depressivity, psychological distress, perceived health and quality of life among women and men who have experienced infertility. It was a cross-sectional study. The total sample was 2291. Mental disorders (composite international diagnostic interview, CIDI), depressivity (Beck Depression Inventory, BDI), psychological distress (General Health Questionnaire, GHQ-12), perceived health and subjective quality of life were used as tools. Childless women with infertility experience increased adjusted risks for dysthymia (OR 3.41, 95% CI, 1.01-11.5) and anxiety disorders (2.67, 1.00-7.12) compared to women who had not experienced infertility.

Lee (2010) explored the grief responses and coping strategies among infertile women after failed in-vitro fertilization treatment using cross-sectional study and investigated 66 women who had experienced at least one failure with IVF treatment. The data were gathered by a self-administered structured questionnaire, and included the participant’s personal profile, grief responses and the Jalowiec’s coping scale. The most common grief response among the respondents was bargaining, followed by acceptance, depression, anger, denial, and isolation. The order of coping strategies used, from highest-to-lowest, were confrontative,
optimistic, self-reliant, fatalistic, supportive, evasive, palliative, and emotive. Use and self-perceived effectiveness among all coping strategies had a high correlation, except emotion. Bargaining, the most common grief response, was associated with a variety of coping strategies. All coping strategies were correlated with grief responses. The results of identifying the grief responses and associated coping strategies of women who have undergone failed IVF treatment may assist nurses and other health care professionals in their efforts to provide appropriate information, care and psychological support.

Shahid (2010) conducted a study to investigate the relationship between perception of social support and marital satisfaction among infertile couples. Moreover, coping strategies were also examined separately for husbands and wives. The instruments used were Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, and Farley, 1988), Comprehensive Marital Satisfaction Scale (Blum and Mehrabian, 1999) and Brief COPE (Carver, 1997). The study was completed in three phases. The first phase consisted of translation of MSPSS following a try out study (n = 40) that aimed at establishing the psychometric properties of the instruments. In the second phase, the translated scales were administered on a sample of husbands (n=20) and wives (n= 20) of infertile couples. The results of try-out yielded satisfactory results. The third phase comprised of main study conducted on 100 infertile couples (husbands n= 100 and wives
seeking infertility treatment. The age of the husbands and wives ranged from 24 years to 55 years (M=33.55, SD=5.84) and 20 years to 50 years (M=29.71, SD=5.64) respectively. The results revealed a significant positive correlation between perception of social support and marital satisfaction among infertile couples. Regression analysis showed that perception of social support is an important predictor in determining the marital satisfaction of infertile couples. Wives tend to exhibit more active-avoidance and religious/denial coping and husbands were more likely to employ problem-focused and positive coping. Chi-square analysis demonstrated that wives showed more interest towards adoption of a child as compared to husbands. On the basis of qualitative data, different themes emerged depicting the perceptions of infertile couples about impact of childlessness on their lives.

Kraaij (2010) conducted a research in which the relationships between cognitive coping strategies, goal adjustment, and symptoms of depression and anxiety were studied in people with fertility problems. Both cross-sectional and prospective relationships were studied in a sample of 313 patients attending an infertility clinic. Self-report questionnaires were filled out at home. Positive refocusing, rumination and catastrophizing, and goal reengagement were related to symptoms of depression and anxiety. When looking at the long-term effects, rumination and catastrophizing were also related to emotional problems nine months later. These findings suggest that the intervention
programs should focus on the cognitive coping strategies and goal-based processes.

Schmidt (2010) stated that fertility problem stress is related to the strains of infertility and its treatment produce stress in the personal, social, and marital domains. Infertility and its treatment are low-control stressors; that is, stressful situations in which the infertile couple can do little or nothing to influence the nature or the outcome of their situation. Further, infertility is a chronically stressful situation, a nonevent transition. Chronic stressors develop slowly as continuous and problematic conditions in our social conditions or social roles. Among the couples referred to fertility treatment, symptoms of depression were more highly associated with social, sexual, and relationship concerns than with the need for parenthood.

Oyer (2009) conducted a study in South Africa to assess the psychological distress quantitatively in men suffering from couple infertility. The total sample was 240 in experimental group and 120 in control group. The symptom checklist-90R, a standardized instrument for the measurement of current psychological symptom status was used as a tool. Raw test scores were converted into standard area T scores and analysed further. Male partners of infertile couples had significantly elevated mean T scores for all nine primary symptom dimensions as well as the 3 global markers of distress (P<0.0001 versus control).
Joshi (2009) investigated the psychological distress, coping resources and subjective well-being among the infertile women in comparison to normal women. The sample for the study consisted of 200 women (100 infertile and 100 normal). The sample was assessed with Subjective Wellbeing Inventory, Coping Resources Index, and General Health Questionnaire-12 (GHQ-12). The data were processed for Discriminant Analysis. When compared, the results clearly demonstrated that the infertile and normal subjects differ significantly on five of the eight variables of coping. Infertile women have scored significantly lower than their normal counterparts. The second measure, in this study, is Subjective Well-being (SWB). On nine out of eleven domains, both infertile and normal subjects differ significantly. Two variables, Confidence in Coping and Perceived Ill Health have not shown any difference between the groups. The results show that both the infertile and normal group differs significantly on the measure of psychological distress. The ‘F’ ratio for the measure is 39.64, which is significant at .01 level of probability. The mean score for infertile women is 3.35 as compared to 1.24 for normal women. It may be interpreted as infertile women undergo more psychological distress as compared to their normal counterparts. So to sum up the poor subjective well-being, high level of psychological distress, and inappropriate coping among infertile women was compared to their normal counterparts.
Donkor (2009) performed a study to explore the coping strategies adopted by 615 women seeking infertility treatment in southern Ghana. Both closed and open-ended questions were used through a survey conducted using face-to-face interviews in three languages at three health sites—a hospital, a health center and a private clinic. The findings revealed that the majority of the women preferred to keep issues of their fertility problems to themselves. The reason could be the associated stigma of infertility. Further, the majority of the women coped through drawing on their Christian faith. Others also coped through the support they received from their husbands, their occupation by way of achieving economic independence, and some avoided situations that reminded them of their infertility problem.

Chakravarty (2009) stated that several authors have quoted that sexual dysfunction may result in the inability to conceive. Amenorrhoea and other types of endocrine and reproductive dysfunctions have been shown to be associated with psychological stress. It has also been suggested that social factors may be a logical distress, which appears to be a casual factor of infertility. Moller and Fallstroms (2009) suggest that stress is not only a contributing factor for infertility but may be increased as a result of infertile condition, creating a vicious cycle, which may further impair the couple’s inability to conceive.
Braverman (2009) stated that sexuality may be linked to procreation during fertility treatment and is often divorced from recreation or intimacy. Timed intercourse can add to the burden of feeling measured, pressured, and stressed. Some women report feeling of distance from their bodies because of the procedures or timed intercourse; men report feeling of performance pressure with timed intercourse. Adding to these stressors are the feelings associated with unhappiness, anger, or disappointment in one’s own body. None of these feelings or stressors enhances the sense of being a sexual person with sexual desires. This, further, adds to the burden on the relationship.

Coping with stress may ultimately provide assistance to conception through stress reduction. Improved coping strategies may also reduce relationship stress and improve communication, leading to more congruence between partners in pursuing treatment. Stress reduction should also lead to an improved sense of well-being. The relationship between stress and outcome is multifactorial – both complicated and curvilinear (Braverman, 2009).

A woman may feel stress or inadequacy when her belief that ‘I cannot be a real woman unless I get pregnant’ leads her to avoid interpersonal relationships in order to escape the painful feelings that arise from feeling isolated from the fertile world.
In addition, the recognition, as well as differentiation, of infertility as a crisis leads to stress. For some clients, infertility awakens or aggravates long-term issues in their lives, such as anxiety about intimacy, poor communication skills, etc. The cyclic nature of infertility treatment creates the feeling in the patient of an immediate infertility crisis (Braverman, 2009).

Desai (2009) stated that infertility is clearly a devastating state that affects many aspects of life. Many couples are depressed, anxious, feel lonely, experience marital stress and withdraw socially. Infertility is not a life-threatening situation. It is a struggle to have a family, to fulfill a dream, to be happy. The treatment itself is emotionally taxing and may increase the pain the couples endure. If we consider it a struggle for happiness, big efforts should be made to decrease mental pain as much as possible, regardless of the results of treatment. Couples should be taught ways to decrease their stress, to improve their coping, to strengthen their relationship.

Desai (2009) stated the ways to Help Women Cope

1. Include both members of the couple in all investigative and treatment efforts as much as possible. Place both partner names on office files and encourage both to attend all medical meetings.

2. Assure them that it is normal and common to experience grief and describe to them what a grief response might feel like.
3. Be aware of what the couples are experiencing, what each unsuccessful trial means to them, what emotions they are currently struggling with, how infertility and treatment are affecting their relationship.

4. Give information such as, what is the diagnosis, what does it mean, what tests do they need to take and what each test means, what treatments are available and what is known about each treatment. Refer them to credible websites or give them written information. Interestingly patients report that one of the more important outcomes of psychological interventions is the opportunity to receive and increase their medical knowledge.

5. Assist them with decision-making by helping them understand that there is no “best” decision that fits all couples. There are many decisions to make throughout the process including when to start a treatment, choosing a treatment, deciding when to take a brake, and deciding when to end treatment.

6. Recommend the use of support groups, web-forums, and psychological therapy.

7. Encourage them to take some breaks between cycles, to regain a sense of normality.

8. Check how the patients explain the causes for their infertility. Do they blame themselves? Do they have any irrational thoughts? Sometimes they feel that what caused this infertility is something that they have done. Sometimes they feel they are being punished for something they did. Unless they are very young, they may feel that they should not have waited so long before attempting to conceive. If you recognize
any irrational thought or self-blame, give them medical information that dispel such thoughts.

Nelson (2008) conducted a study in New York, USA to assess the quality of life, sexual health, and depression in the female partner of infertile couples. The design used was survey design. Couples with infertility attending two tertiary care medical centers were selected for the study. Totally 121 couples constituted the study population. Female partners completed the female sexual function index, a modified self-esteem and relationship questionnaire, epidemiological studies depression scale and the short form-36 for general quality of life. Demographic fertility and co-morbidity information were also recorded. According to depression scale 19% of women had moderate and 13% had severe depression. The mean total Female sexual function index score was 28 (maximum score of 36) with 26% of the women scoring below 26.55, an established cut-off for high risk of female sexual dysfunction. The results revealed that depression and sexual dysfunction are prevalent in female partners of infertile couples.

Zorn (2008) conducted a study in Slovenia to evaluate whether the psychological factors in males affecting the semen quality and pregnancy. The total sample was 1076. The participants filled WHO well-being Index and the Zung’s Anxiety scale Inventory. The results showed that regression analyses indicated a significant positive relationship between the level of sperm concentration and the WHO well-being Index Score, each
successive score number accounting for a 7.3% increase in sperm concentration (P=0.039).

Sreshthaputra (2008) conducted a study, in Thailand, to identify infertility–related stress among men and women and to examine its relationship with the level of perceived social support. The total sample was 238. The Fertility Problem Inventory (FPI) and the Personal Resource Questionnaire (PRQ) were used to assess the level of infertility–related stress and perceived social support respectively. The results showed that the global FPI scores for men and women were 154.2 +/- 18.3 and 154.7 +/- 22.6 respectively (P>0.05). There was no significant difference in their perceived social support (PRQ scores = 137.8 + 14.0 and 134.0 +/- 16.7 respectively). A significant negative correlation (r= -0.1894; P<0.001) existed between global stress and social support in women, but not in men. The results showed that infertile couples experienced a high level of stress, and there was no gender difference in infertility–related stress.

Kraaij (2008) examined the relationships between the infertility characteristics, cognitive coping strategies, and depressive symptoms in definitive involuntarily childless people. Both cross-sectional and prospective relationships were studied in a sample of 169 persons for whom an involuntarily childless future was definitive. The Cognitive Emotion Regulation Questionnaire (CERQ) and the Symptom Check List (SCL-90) were
filled at home. Almost no infertility characteristics were related to depressive symptoms. The cognitive coping strategies self-blame, rumination, catastrophizing and positive reappraisal appeared to be related to depressive symptoms. In addition, catastrophizing was related to depressive symptoms two years later. These findings suggest that intervention programs for people with definitive involuntary childlessness should pay attention to cognitive coping strategies.

Parveen (2008) conducted a study to assess the Psychosocial Adjustment of Educated and Uneducated Infertile Females of Pakistan. It was a Cross-Sectional study. The data were collected from infertility Advisory Center, Sheikh Zayed Hospital, Fatima Memorial Hospital and Jinnah Hospital Lahore, from March 2005 to July 2005. The total sample consisted of 50 diagnosed infertile females, age range 25-45 years, prerequisite condition was that they had a minimum duration of marriage of three years without children and were under the treatment. In this study, 40 translated items were used to assess the psychosocial adjustments, which were derived from Bell Adjustment Inventory (BAI). The data were analyzed by the help of SPSS. Results: The Results indicated that there is a significant difference ($t=3.39$ and $p<0.05$) between psychosocial adjustment of educated and uneducated infertile females. The social class, employment and unemployment factors have also significant impact on adjustment of infertile females.
Lechner, Bolmer and Dalen (2007) conducted a study, in Netherland, to identify the association of coping style and the degree of satisfaction regarding social support from primary support groups with distress symptoms of involuntarily childless individuals. It was a cross-sectional study. The sample consisted of 116 persons. The sample group completed a questionnaire consists of passive and active coping styles from the Utrecht coping list (UCL), the discrepancy variant of the social support list (SSL-D), the short version of the questionnaire on experienced Health complaints (VOEG-21), Hospital Anxiety and depression Scale (HADS) and the Inventory of Complicated Grief-Revised (ICGR), adapted for this study. The results showed that the women experienced more health complaints, more anxiety and depression symptoms. The study explained variance of the different distress symptoms varied from 30 to 65%. The concept active coping style was negatively associated with depression, anxiety and complicated grief.

Farzadi, Hosseni, Fatemi and Alikhah (2007) conducted a descriptive study to evaluate the stressors and coping strategies of 150 infertile women presenting to Tabriz Al-Zahra Hospital from August 2000 to February 2002 who were selected by convenience sampling and were evaluated. The data were collected by regular interview and questionnaire with closed-response questions. Of the 31 questions in the questionnaire, to reach to the study goals (determination of psychosocial stressors and their intensity), they
used the same method; and to reach to the assessment of coping strategies, the 40-item Jalowiec scale (including 25 affection-oriented and 15 problem-oriented coping strategies) was used.

Tiredness due to frequent trips to the clinic was the most common physical stressor in 67.3% cases with severe and very severe intensities; and anxiety about effectiveness of treatment was the most common mental stressor in 87.3% cases with severe and very severe intensities. Of affection-oriented coping strategies, 26 praying and trust in GOD was the most used coping strategy (79.3%). Of the problem-oriented coping strategies, accepting the situation was used always in 74%. The Psychosocial stressors were more frequent in comparison with physical stressors. So, obviating the affective problems of infertile women will have significant role in decrease of their stress and anxiety.

Ehsanpour, Mohsenzadeh, Kazemi and Yazdeni (2007) conducted a study to investigate the relationship between the social support and stress of infertility treatment. It is a descriptive correlative study on 75 couples (150 subjects) who referred to clinics of Isfahan for professional treatment of infertility. The sampling method was simple and the subjects selected were based on entry criteria. The data were collected using a questionnaire completed at the time of interview and included the personal and social characteristics, infertility treatment stress and social support. The results showed that the mean score of infertility
treatment related stress was 58.68 and 86.7% of couples experienced average to severe stress in professional treatments for infertility. The highest and lowest score of social support were 23.28 and 84.45 for spouse support and 2nd and 3rd level relatives, respectively. There was an inverse correlation between social support and infertility treatment related stress (p = 0.0001). Also, there was a significant relation between age, sex, and career with infertility treatment stress.

Farzadi (2007) stated that receiving a diagnosis of infertility is a significant life crisis. Feelings of grief and loss are very common as couples come to terms with the fact that they are not able to conceive. Infertility result in a decrease in quality of life and an increase in marital discord and sexual dysfunction. The burden of infertility is physical, psychological, emotional and financial.

For many couples, infertility is undeniably a major life crisis and psychologically stressful. Different emotional coping styles between men and women may add to what is an already stressful time. However, the literature suggests that infertility is more stressful for women than for men and on the other hand, most of therapeutic procedures are performed on females causing more anxiety and depression (Farzadi, 2007).

Infertility itself has been reported to cause depression on women. Studies have found infertile women to be more neurotic,
dependent and anxious than fertile women, experiencing conflict over their femininity and fear associated with reproduction.

Psychosocial stressors were more stress-generating than physical stressors. The treatment of infertility is often difficult, time-consuming and expensive including some physical interventions, but mental stressors for couples and their effects on life quality are more important (Farzadi, 2007).

Indeed, mental aspects of infertility are more difficult to be tested and treated. Most of the studied patients had used always from three affection-oriented coping strategies including praying and trust in GOD, anxiety and weeping. The great use from praying and trust in GOD with studied patients can indicate the religious and cultural background of them. Weeping, also is one of the 3 most common coping strategies in patients. The women stated that they have been wept often because of their infertility and in order to be relieved (Farzadi, 2007).

Lechner, Bolman and Dalen (2006) conducted a study to investigate the association of coping style and the degree of satisfaction regarding social support from primary support groups with distress symptoms of involuntarily childless individuals. The Subjects in this cross-sectional study were people who wanted to have children with their partner but were unable to conceive and had acknowledged their involuntary childlessness. The sample consisted of 116 persons (response 88%) with an average age of 39
years (SD = 6.0), with 75% women. The sample group completed a questionnaire consisting of passive and active coping styles from the Utrecht Coping List (UCL), the discrepancy variant of the Social Support List (SSL-D), the short version of the Questionnaire on Experienced Health Complaints (VOEG-21), the Hospital Anxiety and Depression Scale (HADS) and the Inventory of Complicated Grief Revised (ICG-R), adapted for this study. The results showed that women experienced more health complaints, more anxiety and depression symptoms and more complicated grief than the general population. Regression analysis showed that when controlled for sex and the duration of involuntary childlessness, the concepts passive coping style and dissatisfaction with social support were positively associated with health complaints, depression, anxiety and complicated grief. The concept active coping style was negatively associated with depression, anxiety and complicated grief.

Pottinger et al., (2006) conducted a study to identify the gender differences in coping responses and the association between coping and psychological distress in couples undergoing Invitro-fertilization (IVF) treatment. The samples, both men and women, (n=52) were invited to complete the questionnaires on their coping responses (Ways of Coping Checklist (19) were used), self-reported distress (General Health Questionnaire (GHQ-28)) and socio-demographic data. The result showed that Seeking medical advice and engaging in wishful-thinking, namely, hoping
for a miracle and fantasizing about the outcome were the strategies most commonly used by more than 75% of participants. The least reported strategies included “avoiding being around pregnant women or children” and “eating, smoking or drinking more” both men and women used wishful thinking strategies and seeking advice most often and to a lesser extent emotion-focused coping. Women, generally, used all the three types of strategies more often than men.

The strategies that men used more often were those that allowed them to avoid talking about their experience, namely “keeping feelings to themselves” and “making self better by eating, drinking or smoking”, along with the specific problem-solving strategy of using alternative medicine. Gender differences were found to be statistically significant for two of the coping strategies. More women engaged in excessive self-blame than men (32% vs 4%, FET, p=0.01). Also, significantly more women than men isolated themselves by keeping others from knowing their pain (44% vs 13%, FET, p = 0.02). It is noted that no one reported “taking out their feelings on others,” and while 17% of women reported avoiding encounters with pregnant women or young children, the men denied doing so. Pearson correlation was used to correlate coping strategies of participants with reports of feelings of hopelessness, worthlessness and despair. Although only 15% of the participants reported distressing feelings, a direct relationship was found between persons who reported about the
feeling psychological distress and those who ruminated about what they did wrong or kept others from knowing their pain (p < 0.05). All participants who reported high levels of distress were female except for one.

Peterson (2006) conducted a study on men and women who use a variety of coping strategies to manage stress associated with infertility. This study examined the coping behaviors of 1026 (520 women, 506 men) consecutively referred patients at a University-affiliated teaching hospital. Participants completed the Ways of Coping Questionnaire, Fertility Problem Inventory and the Dyadic Adjustment Scale. Women used proportionately greater amounts of confrontative coping, accepting responsibility, seeking social support and escape/avoidance when compared with men, whereas men used proportionately greater amounts of distancing, self-controlling and planful problem-solving. For men and women, infertility stress was positively related to escape/avoidance and accepting responsibility and negatively related to seeking social support, planful problem-solving and distancing. By analyzing the relative coping scores, this study identified key gender differences in how men and women cope with infertility. This was particularly true for men’s coping processes that had previously remained hidden because of less frequent use of coping strategies when compared with women.
Barzilai (2006) conducted a study in Israel to examine the possible association between the women’s occupational stress and outcome of fertility treatments. It was a prospective cohort study. The total sample was 75. A structured questionnaire measuring burnout, Job strain, and job satisfaction was used. The results showed that women who perceived their job as more demanding were less likely to conceive (relative risk 0.6; 95% CI = 0.42-0.96).

Levy (2006) stated that men and women experience infertility differently. The women in infertile couples often are distressed, whereas the men tend to remain more confident that some kind of treatment will work. This imbalance can leave the woman’s feeling left unsupported and the man’s feeling get confused about why she is so upset about what he sees as just a medical problem to be solved.

When a couple’s infertility has been attributed to sperm abnormalities, however, the man’s stress level can equal the woman’s. Women tend to feel stress regardless of which partner is “at fault” (Levy, 2006).

Boivin (2005) conducted a study, in Denmark, to examine the separate and Joint effects of male and female fertility problem stress and the source of stress on treatment outcome. It was a prospective, epidemiological cohort design. The setting was fertility clinics in Denmark. The total sample was 818 couples. Fertility problem stress inventory was used as a tool. The results
showed that fertility problem stress was associated with a poorer treatment outcome in women (correlation = .517) and men (.392) with the effect significantly more pronounced for women (Z=3.19, P<.001).

Schmidt, Holstein, Christensen and Boivin (2005) conducted a study in Denmark to investigate marital benefit, communication and coping strategies. It was a prospective cohort design with 2250 samples. The data were based on self-administered questionnaires measuring marital benefit, communication, and coping strategies. The results showed that only 25.9% of women and 21.1% of men reported high marital benefit. Among men the medium use of active-confronting coping and use of meaning-based coping were significant predictors for high marital benefit. Having the infertility as a secret, difficult marital communication, and using active-avoidance coping were among men significant predictors for low marital benefit.

Bellone (2005) conducted a study, in France, to examine the psychiatric state of a sterile males. The total sample was 42. The tool used were hetero questionnaire to collect some general information about infertility and a self questionnaire about the sexual, conjugal and social effects of infertility. The Defense Style Questionnaire (DSQ) is a psychometric scale used in common practice in order to measure the defense styles. The results showed that 26.2% of men showed psychiatric disorders according
to the DSM IV with a significant over-representation of generalized anxious disorder and somatization disorder.

Verhaak (2005) conducted a study, in Netherland. It was a longitudinal prospective study. The aim of the study was to identify the emotional adjustment before, during and after consecutive fertility treatment cycles. A total of 148 IVF patients and 71 partners completed self-report questionnaires on anxiety, depression and coping. The assessment of anxiety and depression were repeated immediately following the final treatment cycle and again 6 months later (follow-up). The results revealed that women showed an increase of both anxiety and depression after unsuccessful treatment. In 6 months after unsuccessful treatment, women showed no recovery. At the follow-up >20% of the women showed subclinical forms of anxiety and depression.

Schmidt, Holstein, Christensen and Boivin (2005) conducted a study in Denmark, to investigate coping strategies and communication strategies as predictors of fertility problem stress 12 months after start of fertility treatment. The design used was a prospective, longitudinal cohort design. The total sample was 2250 people. The data were based on self-administered questionnaires measuring communication with partner and with other people, coping strategies: active-avoidance coping, active confronting coping, passive-avoidance coping, meaning-based coping, and fertility problem stress. The results showed that
difficulties in partner communication predicted high fertility problem stress (odds ratio for women, 3.47, 95% confidence interval 2.09-5.76, odds ratio for men, 3.69, 95% confidence interval 2.09-6.43).

Moreira (2005) conducted a study in Portuguese to assess the frequency of stress in infertile women. It was a case-control study. The total sample was 302 women. The tool used was Lipp’s Stress symptoms Inventory and State-Trait Anxiety Inventory. Statistical analysis was performed by using the chi-squared and Mann-Whitney test. The results showed that the stress was more frequent in the case group than the control group (61.8 and 36.0% respectively) P<0.05).

Gennaw (2005) conducted a study, in Italy, to compare the profile of psychosocial variables in a group of oligospermic and normozoospermic men for assessing the hypothesis of a relationship between impaired seminal status and psychosocial factors. Double-blind investigation of the psychosocial differences between oligozoospermics and normozoospermics was used. The total sample was 37 oligozoospermic patients and 37 normozoospermic. The differences in alexithymia (difficulty identifying feelings, difficulty describing feelings, externally oriented thinking, personality traits (extroversion, neuroticism, psychoticism), and coping style toward stressors (task-oriented coping, emotion-oriented coping, avoidance-oriented coping) were
assessed in the two groups. The wilk’s Lambda (.79) of the discriminant analysis showed a statistically significant difference between the two groups. The relationship between psychosocial variables and seminal status has been confirmed in a group of oligozoospermic and normozoospermic men.

Schmidt (2005) in Denmark conducted a study to analyse the cross-sectional association between coping responses with infertility and occupational social class. The data were based on a questionnaire in a consecutive sample of 1169 women and 1081 men who were about to begin assisted reproduction treatment. The coping measure was developed from an adaptation of Lazaus and Folkman’s ways of coping questionnaire and based on results from interviews with infertile people. The measure was developed in 4 categories. Active avoidance coping, active-confronting coping, passive-avoidance coping, meaning-based coping. The occupational social class was measured in a standardized way. The logistic regression analyses showed that women from lower social classes V and VI and men from social classes III and IV used significantly more active-confronting coping. Women from lower social classes V and VI used significantly more meaning-based coping. Both men and women from social classes III and VI used significantly more passive-avoidance coping and significantly less-active-avoidance coping. The results showed that significant social differences in coping with infertility.
Wischmann (2005) found, in Germany, that the success rate of In-vitro fertilization is 13.9% of the attempts. An unfulfilled wish for a child can have both negative, emotional effects on individual partner and consequences for the couples relationship. Women, in particular, suffer from the Psychological stress that can be caused by infertility, they are more anxious, depressed, and have a decreased self-esteem than their partners. The desire to counteract these emotional strains and to enhance the quality of life, requests for counseling services are on the rise.

Mindes (2003) study examined the association of unsupportive social interactions and psychological adjustment among 123 women with fertility problems, and tested whether threat appraisals and avoidance coping mediate this association. Cross-sectional analyses suggested that infertility-specific unsupportive responses received from other people were associated positively with adjustment problems. Avoidance coping and threat appraisals mediated this association between unsupportive social interactions and adjustment. Longitudinal analyses with 67 of these women revealed that after controlling for Time 1 adjustment, Time 1 unsupportive social interactions were associated positively with depressive symptoms and overall psychological distress only for women who remained infertile at Time 2, compared with women who were pregnant or had given birth. Associations between Time 1 unsupportive social
interactions and self-esteem at Time 2 were similar for both groups of women.

Franco (2002) conducted a study in Brazil to develop a psychological evaluation test (PET) in an attempt to identify the couples requiring psychological support when they face the problem of infertility. The study was constituted by a sample of 251 couples with infertility, who attended the maternity foundation. The tool was the questionnaire with 15 questions to detect the emotional reactions. The responses were assigned with 4 grades. 1 – never 2- sometimes 3- many times 4 – always. The sum of the responses corresponded to a PET score ranging from 15 to 60 points. A PET score of >30 points was defined as cut-off point for necessity of specialized. Psychological evaluation Data were analyzed statistically by the student’s ‘t’ test and the Mann Whitney and Fisher tests, with the level of significance set at 5%. The reliability of the questionnaire was determined on the basis of the all the coefficient of cronbach. The results showed that the mean PET score for women (27 +/-8) was significantly higher (P< 0.01, Mann Whitney test) than the PET score for Men (22+/-7).

Berghuis (2002) examined how the intimate partners’ coping processes with regard to infertility predicted depressive symptoms across the course of a treatment cycle, 43 couples completed assessments in the week prior to and the week after receiving a negative pregnancy result from an alternate insemination attempt.
by the partner. Depressive symptoms in both partners increased significantly after the pregnancy result receipt. As hypothesized, avoidant coping predicted increased distress over time, and approach-oriented coping (e.g., problem-focused coping, emotional processing, and expression) predicted decreased distress. Coping strategies engaged in by both individuals and partners predicted depressive symptoms, and for women, interactions also emerged between their own and their partners’ coping.

Mcnaughton (2002) conducted a research about the efficacy of brief couples support groups developed to manage the stress of in vitro fertilization treatment where couples in IVF treatment were given the option of participating in a biweekly support group at the IVF clinic at Wilford Hall Medical Center, San Antonio, Tex. At least 1 member of 26 couples participated in the brief couples support groups, and at least 1 member of 19 other couples completed the questionnaires but did not attend the support group sessions and so comprised the control group. Facilitators used cognitive behavioral techniques to help the participants process their feelings and cognitions about their infertility. Emotional and cognitive factors were assessed both before and after group attendance by using the Beck Depression Inventory; the Beck Anxiety Inventory; the Life Orientation Test, which assesses optimism and pessimism; the Survey of Personal Views, which measures irrational beliefs; and the Social Provisions Scale, which measures social support. The results showed that women who
attended group sessions were significantly less anxious after the IVF treatment than they were before the cycle (P<.001). Men who attended the group sessions were more optimistic than nongroup men or the women at the completion of the IVF cycle (P<.001) but endorsed greater numbers of irrational beliefs (P<.001).

Conclusions: Despite the fact that the service was relatively inexpensive compared with IVF in the civilian community, the complexity of IVF treatment and the logistic and psychological stress experienced by couples made it hard to form and maintain such groups. Nevertheless, both men and women derived psychological benefit from the group: women reported less anxiety and men greater optimism on completion of the group sessions.

Lokih (2002), in China, conducted a study to assess the psychiatric morbidity in Chinese infertile women who underwent treatments with assisted reproductive technology and also the impact of treatment failure. The 30-item General Health Questionnaire (GHQ) and the Beck Depression Inventory (BDI) were employed before and 3 weeks after the assisted reproductive technology treatment. The total sample was 372. Before treatment, 33% of the participants scored above the GHQ cut off. 8% had a BDI score of 20 or above, signifying moderate to severe depression. Following failed treatment, 43% scored above GHQ cut off, and 8% had BDI scores 20 or above. The post treatment GHQ and BDI scores were significantly higher than the
corresponding scores at baseline (P<0.001). About 13% of the participants reported self-harm ideas.

Matsubayashi, hosaka, Izumi, Suzuki and Makino (2001) conducted a study in Japan to clarify whether Japanese infertile women experience emotional distress. This was a cross-sectional study. The total sample was 101 infertile women. The control group had 81 healthy pregnant women. The tool used was the hospital anxiety and depression scale (HADS) and the profile of mood states (POMS). The components of the tool were depression, anxiety, aggression, lack of vigour, fatigue, tension and confusion. The HADS and POMS scores of infertile women were significantly higher than those of pregnant women, except for fatigue score. Infertile Women with positive HADS indicating emotional disorders (38.6%) were significantly (p=0.0008, x^2 test) more than those of pregnant women (16%) when the threshold was set at 12/13 of total HADS scores.

Kowalcek (2000) analyzed whether the coping strategies vary depending on gender and sterility diagnosis. A total of 110 couples were involved for the investigation using the "Freiburg Questionnaire of Coping with Illness". The questionnaire consists of 5 analytic scales, covering one coping-strategy each: F1: depressive coping; F2: problem-faced coping; F3: diversion and building-oneself-up; F4: religion and sense-seeking; F5: trivialization and wishful thinking. The results showed that
women with unfulfilled child-wish score lower than the group of chronically sick only on the scale "religion and sense-seeking", whereas involuntarily childless men activate all coping strategies to a lesser extent than the standardized collective. Compared to their partners, women score higher on the scales "depressive coping" and "diversion and building-oneself-up". Gender and sex-role expectations related to it influence the experience of infertility.

Rajvir et al (2000) stated that the examples of potent stressors for couples include multiple diagnostic tests and examinations, multiple medical and fertilization-assisted therapies and their physical and mental complications, long-term therapies and low degree of their successfulness as well the economic problems caused by these treatments.

Pook, Krause and Rohrle (1999), in Germany, conducted a study to identify the coping strategies among men with infertility. The participants were 63 patients, who contacted an andorlogical clinic more than one time. Prior to clinical examination, patients filled out a questionnaire referring to the way in which they coped with their wives previous menstruation. Participants also completed a scale assessing perceived distress due to infertility. Change in sperm concentration since baseline semen analysis and the level of distress were used to evaluate patient’s adjustment. The better adjusted patients showed less prominent overall coping efforts, and a higher proportion of distancing coping strategies.
Newton, Sherrard and Glavac (1999) conducted a prospective study in university-affiliated teaching hospital in Canada. The sample comprised of 1,153 women and 1,149 men, who were on infertility treatment. The participants' infertility-related stress was assessed by written questionnaire using the fertility problem inventory. The results showed that women scored significantly higher on scales of global stress (F=174.2, P<.001), Social concern (F=26.6, P<.001), Sexual concern (F=31, P<.001), and need for parenthood (F=17, P<.001) compared with men. Both men and women reported male infertility to be more stressful than female infertility. Both men and women, facing male infertility reported higher global stress and more social and sexual concerns than men and women experiencing female infertility.

Taymor (1979) pointed out that, emotional tensions can directly affect fertility by altering hypothalamic – Pitutary pathways or by causing tubal spasm and indirectly by contributing to vaginisms, dyspareunia, frigidity, and to a decrease in male libido. Equally important to the concept that emotional stress can affect fertility is the concept that infertility can result in emotional stress, thus initiating a vicious cycle. Many couples, prior to the development of an infertility problem, were in a state of good emotional health, suffer a serious emotional breakdown in associating with the state of infertility, a “Crisis of infertility”.

4. Effect of Infertility on Psychosocial Well Being and Quality of Life on Women with Infertility

Felskov et al., (2013) conducted a study to identify psychiatric disorders in women with fertility problems. It was a retrospective cohort study designed using data from a cohort of 98,320 Danish women evaluated for fertility problems during 1973-2000 in Demark. Information on reproductive status for all women in the infertility cohort was obtained by linkage to the Danish Medical Birth registry. The results showed that 4,633 women were hospitalized for a psychiatric disorder.

Chachamovich, Chachamovich, Fleek, Cordoval, Knauth and Passos (2009), in Brazil, conducted a prospective cross-sectional study to explore the congruence of quality of life among infertile men and women. The total sample was 162 couples. The participants completed WHO quality of life questionnaire. The results showed that the quality of life scores from the infertile sample are lower than the healthy controls in 3 domains, physical, psychological and social relationship.

In physical the $x = 83 \pm 10.5$ versus $77.3 \pm 13.4$ with p value $= 0.07$

Psychological $x = 78 \pm 10.5$ versus $72.8 \pm 12.2$ with p value $= 0.08$

In social relationship $x = 78 \pm 13.0$ versus $62.5 \pm 12.7$ with p value $= 0.08$ P$<0.001$. Paired t-tests within couples showed that
only the psychological and the social relationship domains were statistically different.

Lau (2008) conducted a study to identify the infertility-related perceptions and responses and their associations with quality of life among rural Chinese infertile couples. An anonymous cross-sectional survey interviewed 192 infertile couples consulting a family planning clinic in rural China. Of them, over 30% believed that childless couples could not live well, 80% desired to have a child very badly, over 60% pressured themselves or spouse due to infertility, and over 50% felt pressured when having sex.

Furthermore 19.8% of men and 37.5% of women felt that infertility is humiliating for women. A multivariate analysis showed that lower income, a worsened spousal relationship infertility related perceptions, pressuring oneself or spouse due to infertility, and a strong desire for children were significantly associated with a lowered quality of life.

Wirtberg, Miller, Hogstrhm, Tronstad and Lalos (2007) in Sweden, conducted a study to explore the long term experience of childlessness among 14 Swedish women, 20 years after their infertility treatment. In-depth interview were conducted. The Childlessness had a strong impact on all the Women’s lives and was for all a major life theme. The effects were experienced both at personal level and on interpersonal and social levels. Half the
number of the women were separated. One sexual life was affected in negative and long-lasting ways. The effects of childlessness were especially increased at the time the study was conducted, as the women’s peer group was entering the ‘grandparent phase’. Many coped with their childlessness by caring for others, such as the children of friends or relatives, elderly parents or animals.

Wiersema, Drokker, Mai, Giang, Nguyen and Lamback (2006) in Vietnam conducted a study to explore the psychological, socio-cultural, economic consequences of infertility on couple’s life. This study included 118 infertile couples who filled the questionnaires and 28 men and women who were interviewed. The results showed that men and women do not differ in their responses and attitudes towards infertility.

Almost one-third of the participants require psychological support. Interviewees experience secrecy, social pressure and economic hardship. To conclude, childlessness is an important social and economical burden that needs attention.

Araoye (2003) stated that infertility is of public health importance in Nigeria and many other developing nations because of its high prevalence and especially due to its serious social implications. Infertility causes marital disharmony, which often leads to divorce. Women are often blamed for the infertility and men engage in polygamy in an attempt to have children. The
couple also suffer from stress due to the management of the infertility.

Stotland (2002) observed that infertility, reproductive technologies, and abortion are among the most emotionally weighty and Philosophically contentious experiences in most patient’s lives. They involve the most intimate body parts and behaviours and the most heartfelt hopes and profound disappointments. They can strain relationships with partners, relatives and friends.

Kainz (2001) found that the experience of infertility can be devastating for the couple desiring a child. For women, pregnancy and motherhood are developmental milestones that are highly emphasized by our culture. A psychologist, or other mental health professional on the health care team, is essential to treatment of the bio-psychosocial nature of infertility.

Lee, Sun and Chao (2001), in Taiwa, conducted a study and the purpose of the study was to compare the differences in distress, marital and sexual satisfaction in husbands and wives based on infertility diagnosis. Three structured questionnaires were used as tool. Female members of couples, in which both partners were infertile, expressed less marital and sexual satisfaction than their husbands. No differences in marital and satisfaction were found between wives and husbands with unexplained infertility. Only wives with a diagnosed female
infertility expressed higher distress to infertility than their husbands. No differences in psychosocial responses were found among husbands, regardless of the diagnosis. Wives with a diagnosed female infertility experienced higher distress in self-esteem and less satisfaction in acceptance by in-laws than wives experiencing a diagnosed male infertility.

Kerr, Brown and Balen (1999) conducted a study in UK to identify the experiences of the couples who have had infertility treatment. The Research method used was survey method. A questionnaire was sent to 2000 members of two of the largest national infertility support organizations. A total of 980 questionnaires were completed and returned. One in three said that they did not fully understand the medical nature of their own or their Partner’s infertility. A wide range of negative emotions were experienced by respondents. One in five said that they experienced suicidal feelings, one in three said that infertility had strained their relationship, and just over one-quarter found that their relationship improved as a result of the treatment. A majority of 71% said that they would request counseling if it were offered free, but only 12% had been provided with free counseling.

Tarlatzis (1993) conducted a study to assess the psychosocial impacts of infertility on Greek couples. He collected the data through interview method. He used the life events scale, the Marlowe-Crocone/Taylor scale and the side effect checklist.
The results showed that the stress has been identified in both sexes. Depression mostly in women, while men showed a tendency towards repressed anxiety and thus a greater risk of psychosomatic illness. Women showed a high defensive anxiety and also reported numerous psychosomatic symptoms. These couples seem to have special needs and fears, both general and treatment specific. Very few of our couples would be considered as severely emotionally disturbed. Women seem to have more difficulties in social adjustment. Sexual dysfunction was reported by almost half of our subjects. Both partners seem to have psychological problems.

5. Efficacy of counseling, relaxation therapy and support system in women with infertility

Matthiesen et al., (2012) conducted a study in fertility clinic, Aarhus University hospital, Denmark to assess feasibility and effectiveness of expressive writing intervention (EWI) for patients in treatment with assisted reproductive technology. A total of 82 participants (45 women, 37 men) were randomized to home – based EWI or neutral writing control group and completed an infertility-related stress questionnaire at treatment enrollment, 3 weeks later and 6 weeks after the intervention. The results showed a mixture – within ANOVA showed a main effect of time (wilks Lambda = 0.68, F(2,28) = 6.48) as well as a significant interaction effect between group and time (Wilks Lambda = 0.83, F (2,28) = 2.92).
This revealed that infertility–related stress decreased after the intervention in the EWI group compared to controls.

Martins (2011) had conducted a study, in Portugal, and examined the relationships between social support contexts and infertility stress domains, and tested if they were mediated by infertility-related coping strategies in a sample of infertile women. The Multidimensional Scale of Perceived Social Support, the Copenhagen Multi-centre Psychosocial Infertility coping scales and the Fertility Problem Inventory were completed by 252 women seeking treatment. The Structural equation modeling analysis was used to test the hypothesized multiple mediation model. The results showed that the final model revealed negative effects from perceived partner support to relationship concern ($\beta = -0.47$), sexual concern ($\beta = -0.20$) and rejection of childfree lifestyle through meaning-based coping ($\beta = -0.04$). Perceived friend support had a negative effect on social concern through active-confronting coping ($\beta = -0.04$). Finally, besides a direct negative association with social concern ($\beta = -0.30$), the perceived family support was indirectly and negatively related with all infertility stress domains ($\beta$ from -0.04 to -0.13) through a positive effect of active-avoidance coping. The model explained between 12 and 66% of the variance of outcomes. Despite being limited by a convenience sampling and cross-sectional design, the results highlight the importance of social support contexts in helping women deal with infertility treatment. Health professionals should
explore the quality of social networks and encourage seeking positive support from family and partners. The findings suggest it might prove useful for counselors to use coping skills training interventions, by retraining active-avoidance coping into meaning-based and active confronting strategies.

Hughes and Silva (2011) conducted a study, in Canada, to assess the art therapy as a mental health intervention for sub-fertile women. The total sample was 21 sub-fertile women. Weekly 2 hour art therapy group courses were held. The effectiveness of art therapy was assessed using Beck Hopelessness, Depression and anxiety Inventories. The results showed that Mean Beck Hopelessness Scale fell from 6.1(3.8) to 3.5 (3.1, P=0.01) after therapy. Beck Depression Inventory-II, score fell from 19.8(11.0) to 12.5 (10.2, P=0.01), and Beck Anxiety Inventory Score changed from 12.4 (8.4) to 8.4(5.2, P=0.3).

Venkatesan (2009) conducted a study, in Chennai, to assess the impact of positive therapy upon the stress levels in infertile women. The Method used was randomized clinical trial. The total sample was 120 (60 in experimental group and 60 in control group). The results have shown that in experimental group the Posttest stress level (M=164.30, SD = 19.03) was less than the pretest stress level (M = 247.51 SD = 23.14) and the difference was statistically significant at P < .001 level. In the control group there was no statistical difference between the pre test (M = 246.65
SD = 22.18) and Posttest (M=247.06 SD = 21.89) stress levels. The results can be attributed to the effectiveness of positive therapy and has direct implications for nursing practice.

Noorbala et al., (2008), in Iran, conducted a study to determine the factors affecting depression in infertile couples and the impact of psychological intervention before or during infertility treatment. It was a cross-sectional study with 638 infertile couples assessed for depression. Among them, 140 couples with a member who had a Beck Depression Inventory Score of 17 or higher were randomized to receive psychological treatment either before or during infertility treatment. Logistic regression was performed to eliminate confounding factors. The results showed that depression was initially found in 48% of women and 23.8% of men. The Mean/SD Beck scores fell from 18.7 +/-9.7 to 10.7 +/-5.8 (P<0.001) in the group psychologically treated before they received infertility treatment.

Faramarzi, Kheirkhah, Esmaelzadeh, Alipour, Hjiahmad and Rahnama (2008), in Iran, conducted a study to compare the effects of psychological intervention with psychotropic medication on the mental health improvement of depressed infertile women. It was a randomized controlled clinical trial. Totally 89 depressed infertile women were divided into 3 groups. 1 group for cognitive behavior therapy (CBT), 1 group for antidepressant therapy and 1 group as control group. Twenty nine participants in the CBT group received
10 sessions on relaxation training, restructuring and eliminating negative automatic thoughts and dysfunctional attitudes to infertility. Thirty participants in the Pharmacotherapic group took 20 mg Fluoxetine daily for 90 days. Thirty control subjects did not receive any intervention. All the participants completed the Beck Depression Inventory (BDI) and the General Health Questionnaire (GHQ) at the beginning and end of the study. Paired t-test, ANOVA, Chi(2), and MCNemar tests were used to analyze the data. The results showed that Fluoxetine significantly reduced the mean of 3 subscale scores of the GHQ anxiety (7.3+/−4.1 VS 5.1+/−3.2), social function (7+/−2.8 VS 4.3+/−2), and depression (7.8+/−5.2 VS 4.4+/−2.2), The CBT method effectively reduced the mean of all four GHQ subscales, anxiety (8+/− VS 3.2+/−2), social function (7.2+/−2.6 VS 4.7+/−2.5), depression (7.7+/−4.2 VS 3.6+/−2.7), and Psychosomatic signs (7.5+/−3.2 VS 5.5+/−3.2). Also both methods significantly reduced the total GHQ scores. Successful treatment of depression in 3 groups was fluoxetine group 50%, CBT 79.3%, and Control 10%. The Mean Beck scores among the groups at the beginning and end of study were respectively: Fluoxetine 23.2+/−8.6 versus 14.3+/−8.5 (P<0.001), (CBT 20+/−7.9 Versus 7.7+/−4.8 (P<0.001) and control 19.8+/−8.5 versus 19.7+/−8.4 (P=0.9). Although both Fluoxetine and CBT, significantly, decreased the mean BDI scores more than the control group, the decrease in the CBT group was significantly greater than the fluoxetine group. Psychotherapy, such as group CBT, was
superior to or at least as effective as Pharmacotherapy to promote the well being of depressed infertile women.

Cousineau et al., (2008) conducted a study, in USA, to develop and test the effectiveness of a brief online education and support program for female infertility patients. It was a randomized – controlled trial. Using a solomon – four group design, 190 female patients were recruited. The psychological outcomes assessed included infertility distress, infertility self-efficacy and coping style. The results showed that women exposed to the online program, significantly, improved in the area of social concerns (P=0.038) related to infertility distress, decreased global stress (P=0.10), sexual concerns (P=0.059), distress related to child-free living (P=0.063).

Marcus (2007), in UK, conducted a survey, with two hundred and forty four patients with infertility, to determine the proportion of patients who were offered counseling, the proportion of those who then received counseling, how useful they found it, and to establish the main reasons why patients may opt not to receive counseling. Seventy-three percent of all the couples were offered counseling over half the number of those patients found it either “very helpful” or “helpful”. In patients, who did not receive counseling, 37% felt that they can cope on their own, 21% complained that they were not offered counseling and 15% expressed that they thought that it would not be beneficial.
Nilforooshan, Ahmadi, Abedi, Mohammad Reza and Mahdi (2006), in Iran, conducted a research to study the effect of cognitive–behavioural counseling, based on interacting cognitive subsystems approach on depression of infertile couples. The research design used was a quasi-experimental. The sample consists of 30 infertile couples, who were placed randomly in the experimental and the control group. Both groups were assessed in two stages, Pretest and post-test, by Beck Depression inventory. The time gap between Pretest and post-test was 6 weeks. The experimental group was exposed to counseling based on interacting cognitive subsystems approach in 6 sessions.

In session I, the subjects got familiar with goals, definition of infertility, depression generation and its symptoms and the relationship between depression and infertility. In addition relaxation practicing along with mental imagery was done.

In session II, the subjects were allocated to the identification of thoughts and feelings. The III session focused on thoughts, mindfulness and meditation were also practiced. In IV session, concentration on breathing was practiced. The V session was allocated to develop the control schema. The main focus was on how they can take care of themselves. At the sixth session, they were instructed to cope with their mood status in future using their instructions.
The results showed that in pretest, the mean of depression in experimental group was 18.00, SD = 9.16 and in control group, M=15.30 and SD = 11.14. In Posttest the mean of depression in experimental group was 9.23, SD = 6.66, and in control group was 14.43 (SD = 11.94). This indicated that counseling based on interacting cognitive subsystems is effective in decreasing the depression of infertile couples in the experimental group than the control group (P<0.0001) and its effect is considerably higher on women than men. (P=0.009). To conclude, the cognitive behavioural counseling based on interacting cognitive subsystems approach is effective in decreasing infertile couples depression and it would be better to consider it as a part of therapy along with biological therapies related to infertility.

Zyl (2005) conducted a study, in South Africa, to establish the point whether patients who receive support counseling would be better equipped with efficient coping mechanisms than patients who were not counseled. Sixty patients were randomly assigned to either the support counseling or the control groups. Questionnaires, measuring Pre and post treatment levels of anxiety, depression and ways of coping, were presented to both groups. The support counseling group received emotional support and counseling, and the control group, no counseling was given. The results showed that t-tests indicated a changed pattern of behavior within the support counseling group, who experienced a
statistically significant (P<0.017) reduction in anxiety levels after the counseling intervention.

Salakos, Roupa, Sotiropoulou and Grigoriou (2004) in Greece, conducted a study to analyze the psychological needs of women who undergo treatment for in-vitro fertilization and to emphasize the importance of the psychosocial support that family planning centers can provide to them. This was a cohort study with closed questions. A total of 235 infertile women participating in an IVF program were studied. The results showed that the psychosocial support and the scientific information provided to those women are insufficient. Fifty nine percent of the women sought more medical information and 32.5% sought emotional support.

Tarabusi, Volpe and Facchinetti (2004) conducted a study to determine the fact whether a cognitive – behavioral group treatment could lead to a decrease of psychological distress in couples waiting for assisted reproduction. The total sample was 50 couples. Two psychometric test have been administered (Symptom Rating Test and Westbrook Coping Scales) at baseline and after 4 months. At baseline, the females showed a higher level of SRT than males (F = 16.6+/-14.1; M=10.2+/-9.0; P = 0.01). This became evident for anxiety (F = 5.6 +/- 4.9; M=3.3+/-3.0, P=0.004), Somatization (F=3.0+/-2.5; M=1.8+/-2.1; P=0.01) and feelings of inadequacy (F=3.9+/-3.7; M=2.3+/-2.7, P=0.01). In
females of CBT group a trend towards a significant decrease in the total value of Psychological uneasiness (the SRT) (from 17.7+/-13.7 to 14.1+/-14.0, P=0.07) was found.

Facchinetti (2004) conducted a study, in Italy, to assess the point whether cognitive-behavioral treatment program attenuates autonomic and neuroendocrine response to a stressful task in infertile women waiting for IVF-ET. The total sample was 45 couples. Women were administered the stroop color-word (CW). Systolic BP, heart rate (HR) and Plasma cortisol were serially measured. Subjects showing a positive HR reaction were selected to receive CBT (12 group sessions over 16 weeks). After 17-19 weeks subjects were re-submitted to the Stroop CW. The HR response to Stroop CW was significantly reduced by CBT while it remained unchanged in the observation group. Similarly, Systolic BP response was reduced after CBT whereas an increase occurred in the observation group. After CBT, a significant decrease in the reaction of plasma cortisol to Stroop CW took place whereas no changes were observed in the other subjects.

Wischmann (2004) indicated that though, from a psychological point of view, infertile couples appear rarely symptomized, some of them do need psychological counseling. Over the last years detailed treatment concepts have been developed in the sequel of psychosomatic research on fertility disorders in Germany. Counseling strategies, advising literature
for patients as well as the “counseling network for infertility Germany” are presented. Hints were given to conduct counseling and curative treatment in the case of infertility.

Boivin (2003), in United Kingdom, did a review of psychosocial interventions in infertility. The purpose of this review was to determine whether the psychosocial interventions improved well-being and to identify the kinds of interventions that were most effective. A systematic search identified all published and unpublished papers in any language and any source that described a psychosocial intervention and evaluated its effect on at least one outcome measure in an infertile population. A total of 380 studies met with the criteria. Analysis of the studies showed that psychosocial interventions were more effective in reducing negative affect. It was also found that group interventions which had emphasized education and skills training (e.g. Relaxation training) were significantly more effective in producing positive change across a range of outcome. Men and women were found to be benefited equally from psychological interventions.

Gribben (2002) observed that in an andrology Laboratory at Belfast UK, during one interview, a patient expressed concerns about infertility but as the nurse used her counseling skills, the patient was able to voice his psychosexual difficulties. This was the first time in 5 years of marriage, the patient talked about his situation to another person. The research nurse was able to
combine good communication and counseling skills to facilitate the patient’s need to face his problem, which enabled him to make a constructive decision about his need for further help. This case highlights the difficult situation in which fertility nurses can find themselves and reinforces the need for nurses involved in the care of infertile couples to have training in counseling skills.

Stammer, Wischmann and Varres (2002) noted that psychosocial counseling and couple therapy for infertile couples as a solution and resource oriented and avoided the psychopathological ascriptions. Couples get support to face the crisis of physical disorder and its emotional consequences; they are also aided in developing prospects and options for a future without a biological child.

Vanhorn (2001) expressed that the psychological needs of couples, are often overlooked, and primary care providers can serve as the initial information source and guide for the couple struggling with infertility. A primary care provider can provide a considerable amount of education, referral for stress management and counseling.

Terzioglu (2001), in Turkey, conducted a study to identify the effectiveness of counseling on assisted productive techniques. This was an experimental study with thirty couples for the experimental group and thirty couples for the control group. Couples in the control group experienced the routine procedures
and the couples in the experimental group took part in the counseling. Three psychological tests were given to the couples, during pre test and Posttest. They were the tests for anxiety, depression and life satisfaction. The difference means test and student’s ‘t’ test were used for statistical analysis. The results of the study showed that couples in the experimental group had lower anxiety and depression scores than in the couples in the control group. Life satisfaction scores and pregnancy rates were higher for couples in the experimental group than for the couples in the control group. Statistical evaluation showed that the difference between the experimental group and the control group was significant (P<0.05). This study demonstrates the importance of the counseling role of the nurse and the development and application of counseling services in assisted reproductive technology Centres, in lowering the anxiety and depression levels of couples and ensuring success of the treatment.

Kim (1999) conducted a study in Korea. The purpose of the study was to determine the relationship between social support and the infertility stress of infertile women. The total participants were 64 infertile women. The data were collected by using social support scale developed by park (1985) and the infertility stress scale developed by Kim et.al. (1995). The results showed that the mean of social support of the infertile women was 3.80. The negative correlation was revealed between social support and the infertility stress (r=.56, P = .001). Thus, the study suggested that
social support is related to the infertility stress of the infertile women. Therefore, it is recommended to apply supportive intervention in caring for infertile women.

Hirsch (1995), in Tacoma, USA, conducted a study to explore the psychosocial effects of infertility and the role that social support plays overtime. Ninety-four subjects entered the study, and 41% of the sample completed it. Contentment, marital satisfaction, sexual satisfaction, self-esteem, sex-role identity and social support were measured. Perceived support ($F(3,111) = 4.77$, $P<0.004$), as well as contentment and self-esteem, significantly increased over time ($F(3,111) = 12.03$, $P<0.0001$, and $F(3,111) = 5.378$, $P<0.002$, respectively) social support was positively correlated with all the dependent measures.

**6. Effect of counseling and relaxation therapy on viable pregnancy**

Abedinia, Ramezanzadeh and Noorbala (2009) aimed to determine the factors affecting depression in infertile couples and the effect of psychological intervention on pregnancy rate of infertile couples.

Six hundred and thirty eight infertile patients referred to a university 35 infertility clinic were evaluated. Among the 140 couples, with different levels of depression, at least one of the spouses was found and the study was continued by dividing them randomly into two groups, entering a randomized clinical trial.
Patients in the case group received 6-8 sessions of psychotherapy before infertility treatment and were given daily Fluoxetin 20-60 mg at the same period, and the control group did not receive any intervention. Three questionnaires including Beck Depression Inventory (BDI), Stress Scale (Holmes-Rahe) and a socio-demographic questionnaire were applied for all patients. Pregnancy rate was compared between two groups. Results: Depression was initially found in 48% of women and 23.8% of men. The mean ± SD Beck scores fell from 18.7±9.7 to 10.7±5.8 in the group psychologically treated before receiving infertility treatment (P<0.001). Pregnancy rate was 47.1% in case group and 7.1% in control group. Pregnancy rate showed a significant relation with duration and cause of infertility and the level of stress in both groups (P< 0.001). Pregnancy rate was shown to be higher in couples with a second level of education in men (P< 0.001).

Domar, Clapp, Slawsby. Dusek, Kessel and Freizinger (2000) conducted a study in Boston to determine the efficacy of 2 different group psychological interventions on viable pregnancy rates in women experiencing infertility of less than 2 years duration. The design used was a prospective, controlled, single-blind, randomized study. The sample size was 184 women who had been trying to get pregnant for 1 to 2 years. The participants were randomized into a 10-session cognitive behavioural group, a standard support group, and to the control group. They were
followed for 1 year. Although there were dropout, finally a total of 47 in the cognitive behavioural group, 48 in the support group, and 25 in the control group were selected. Participants in the cognitive – behavioural group received relaxation training (meditation, progressive muscle relaxation, imagery, autogenic training and yoga), cognitive restructuring, methods of emotional expression, nutrition and exercise.

Support group participants spent the first hour of each session, “checking in” with the group. This included an update on medical visits, and summary of how each participant was feeling. The second hour was spent on a different topic each week, including the impact of infertility. On the participant’s self-esteem; their relationship with their partner, family, and friends; spirituality; and job or career. The results showed that 55% of the cognitive-behavioural and 54% of the support group participants experienced a viable pregnancy, in contrast to 20% of the controls.