Chapter II
REVIEW OF LITERATURE

A Literature review involves the systematic identification, location, scrutiny and summary of written materials that contain information on a research problem. (Polit and Hungler 1978).

Both research and non research related literature were reviewed from published articles and MEDLINE search to broaden the understanding and gain insight into the selected problem under study. The review of literature related to topic of study is grouped under the following headings:

2.1. Incidence of Infertility
2.2. Biological Dimensions of Infertile Women
2.3. Psycho-social Dimensions of Infertile Women
2.4. Attitude towards Treatment Options and Treatment Seeking Behaviour.

2.1. Incidence of Infertility

The purpose of the study by Boivin in 2007 was to review existing population surveys on the prevalence of infertility and proportion of couples seeking medical help for fertility problems. Population surveys, reporting the prevalence of infertility and proportion of couples seeking help in more and less developed countries, were reviewed. Estimates on the prevalence of infertility came from 25 population surveys sampling 172,413 women. The 12-month prevalence rate ranged from 3.5% to 16.7% in more developed nations and from 6.9% to 9.3% in less-developed nations, with an estimated overall median prevalence of 9%. In 17 studies sampling 6,410 women, the proportion of couples seeking medical care was, on average, 56.1% (range 42–76.3%) in more developed countries and 51.2% (range 27–74.1%) in less developed countries. The proportion of people actually receiving care was substantially less, 22.4%. Based on these estimates and on the current world population, 72.4 million women are currently infertile; of these, 40.5 million are currently seeking infertility medical care. The current evidence...
indicates a 9% prevalence of infertility (of 12 months) with 56% of couples seeking medical care. These estimates are lower than those typically cited and are remarkably similar between more and less developed countries.

Gnoth et al (2005) reported that most of the pregnancies occur in the first six cycles with intercourse in the fertile phase (80%). After that, serious sub fertility must be assumed in every second couple (10%) although after 12 unsuccessful cycles – untreated live birth rates among them will reach nearly 55% in the next 6 months. There after (48 months), approximately 5% of the couples are definitive infertile with a nearly zero chance becoming spontaneously pregnant in the future. With age cumulative probabilities of conception decline because heterogeneity in fecundity increases due to a higher proportion of infertile couples. Regardless of age couples with a reasonably good prognosis (e.g. unexplained infertility) may be encouraged to wait because even with treatment they do not have a better chance of conceiving. The others may benefit from an early resort to assisted reproduction treatment.

Different definitions of infertility are used in clinical practice as well as in epidemiological and demographic research. This study by Larsen (2005) assessed whether the definition makes a difference for estimates of the prevalence and socio demographic differentials of infertility and whether one definition would be applicable in both research and clinical practice. Cross-sectional study design was used. Community-based sample of 1,125 women aged 20 to 44 years were the participants. Similar levels and socio demographic characteristics of infertile women were obtained from asking the question “How long have you tried to get pregnant?” and from secondary data collected in a birth history that included date of marriage, date of last birth, current contraceptive use and whether the woman wants another child. The infertility definition made a difference. The World Health Organization definition based on 24 months of trying to get pregnant is recommended as the definition that is useful in clinical practice and research among different disciplines.
To estimate the effects of aging on the per cent of outwardly healthy couples who are sterile (completely unable to conceive without assisted reproduction) or infertile (unable to conceive within a year of unprotected intercourse) a study was conducted by Dunson, Baird and Colombo (2004). Sterility was estimated at about 1%; this per cent did not change with age. The per cent of infertility was estimated 8% for women aged 35-39 years. Starting in the late 30s, male age was an important factor, with the per cent failing to conceive within 12 cycles increasing from an estimated 18 -28% between ages 35-40 years. The estimated per cent of infertile couples that would be able to conceive after an additional 12 cycles of trying varied from 43-63% depending on age.

Carcio (1999) explained that the probability of becoming pregnancy during each cycle of menstruation is 25% in normally fertile couples. The cumulative pregnancy rate during a 12 months period is 85%. He further explained that after 12 months of unsuccessful pregnancy attempts, a cause should be explored because the likelihood of being normally fertile is reduced to only 15%.

In order to shed light on the direction of causality between fertility timing and earnings, this paper uses medical diagnoses of infertility as instruments for age at first birth (for those women who did give birth) and childlessness among married women. Although multivariate ordinary least squares regression results find a positive correlation between childbirth at later ages and higher wages as well as between childlessness and increased wages, delays in childbearing due to infertility do not significantly increase a woman’s wages. Thus, data from the 1995 National Survey of Family Growth (NSFG) indicate that delaying childbirth does not, by itself, guarantee higher wages in the labor market. Therefore, this study does not support the conventional notion of the “mommy track” in which career success and motherhood are incompatible. (Meyer 1999)

2.2. Biological Dimensions of Infertility

This section presents literature that describes biological dimensions and fertility status, such as age, body weight, exercises, sexual dysfunction, menstruation and hormonal dysfunction.
Researchers at the Center for Integrative Medicine, at the University of Maryland's School of Medicine, conducted a meta-analysis of several research studies on the effects of acupuncture on IVF outcomes. (A meta-analysis is a research study that gathers information from several studies and evaluates them together.) The meta-analysis considered seven trials, which all together included 1,366 women. The researchers found that when acupuncture took place on the day of embryo transfer, statistically significant improvements were found in the rates of clinical pregnancies, ongoing pregnancy, and live births. They also found that 10 woman would need to be treated with IVF and acupuncture to see one additional pregnancy. (Gurevich 2010).

Polycystic ovarian syndrome (PCOS) had been shown to cause a reduction in quality of life in a study by Hahn et al (2005) which examined the extent of different PCOS symptoms on quality-of-life, psycho-social well-being and sexual satisfaction. Complete metabolic, hormonal, clinical and psycho-social data were obtained from a total of 120 women with PCOS. Patients were compared with 50 healthy women to establish reductions in quality-of-life and emotional well-being. In addition, the correlation between psycho-social variables and the major clinical PCOS features of obesity (Body Mass Index (BMI), excessive body hair (hirsutism score), acne, hyperandrogenism (serum testosterone levels), disturbed insulin regulation (area under the insulin response curve and homeostasis model assessment of insulin resistance), menstrual cycle disturbances and infertility were analyzed. PCOS patients showed significant reduction in quality-of-life, increased psychological disturbances, and decreased sexual satisfaction when compared with healthy controls. BMI and hirsutism scores, but not the presence of acne, were associated with physical aspects of quality-of-life and sexual satisfaction. No clear effect of androgens or insulin resistance on psycho-social variables was detected.

Similarly, the type of menstrual cycle disturbances or infertility had no impact on psychological well-being. It was concluded that In PCOS, changes in appearance, particularly obesity and hirsutism, reduce physical dimensions of quality of life and decrease sexual satisfaction. The role of biochemical, endocrine and metabolic
parameters as well as menstrual irregularities and infertility appeared to be less important. Clinicians should pay attention to the psycho-social dimensions of PCOS on an individual basis, regardless of symptom severity or treatment response.

Although the effect of maternal age on fertility is well known it is unclear whether paternal age also affects fertility. This cross-sectional study sought to characterize the association between age and semen quality, a well-known proxy of fertility status. (Eskenazi et al 2003) A convenience sample of 97 non-smoking men (aged 22-80 years) without known fertility problems was recruited from a National Government Laboratory. The men provided semen samples and information relating to lifestyle, diet, medical and occupational details. Semen volume (ml), sperm concentration (x10⁶/ ml), total sperm count (x10⁶), motility (%), progressive motility (%) and total progressively motile sperm count (x10) were measured. After adjusting for covariates, semen volume decreased by 0.03 ml per year of age (95% CI: -0.05, -0.01); motility decreased by 0.7% per year (95% CI: -0.92, -0.43); progressive motility decreased by 3.1% per year (95% CI: -4.5, -1.6); and total progressively motile sperm count decreased by 4.7% per year (95% CI: -7.2, -2.2). There was a suggested decrease in sperm concentration and count. The proportion of men with abnormal volume, concentration and motility was significantly increased across the age decades. In a convenience sample of healthy men from a non-clinical setting, semen volume and sperm motility decreased continuously between 22-80 years of age, with no evidence of threshold.

The influence of stress and state anxiety on the outcome of IVF treatment was studied through psychological and endocrinological assessment of Swedish women entering IVF-treatment by Csemanticzky, Landgren and Collins (2000). State anxiety and personality profiles as well as stress hormones were studied in 22 normally menstruating woman entering IVF treatment for tubal infertility. Their personality profiles as well as state anxiety scores measured before entering IVF treatment were related to the outcome of treatment. Twenty two fertile women served as controls. Stress markers were serum prolactin and cortisol. These were estimated by radioimmunoassay. The psychological
evaluation included the Karolinska Scale of Personality (KSP) and state anxiety as measured by the STAI questionnaire. Basal FSH on cycle day 3 and E2 and P4 AUC during the luteal phase were evaluated as hormonal predictors for the outcome of IVF treatment. Comparison of the personality profiles of the two groups showed that infertile women had significantly higher scores of suspicion (P > 0.05), guilt (P > 0.05), and hostility (P > 0.01), but lower somatic anxiety (0.05) and indirect aggression (0.05) than fertile controls. The infertile women also had significantly higher Serum cortisol, prolactin and FSH levels on cycle day 3 did not differ between the women who conceived after IVF treatment and those who did not conceive. However, significant differences were found in C2 and P4 AUC (P > 0.01) in the luteal phase between those woman who became pregnant and those who failed. There was a trend (P < 0.06) toward higher state anxiety levels among the women who did not succeed in becoming pregnant after IVF treatment. The main findings suggest that infertile women have a different personality profile in terms of more suspicion, guilt and hostility as compared to the fertile controls, perhaps as a response to their infertility. Their stress levels in terms of circulating prolactin and cortisol levels were elevated compared to the fertile controls. Psychological stress may affect the outcome of IVF treatment since state anxiety levels among those who did not achieve pregnancy were slightly higher than among those who became pregnant.

To characterize how the menstrual cycle pattern relates to fertility regardless of potential biases caused by inappropriate coital timing during the menstrual cycle or early embryonal loss a prospective follow up study was conducted by Kolstad. et al (1999). Two hundred ninety – five couples who were planning their first pregnancy were followed up from the discontinuation of birth control until a pregnancy was recognized within six menstrual cycles. Early embryonal losses were detected by changes in urinary HCG level. Main Outcome Measure was the probability of pregnancy occurring within one menstrual cycle (fecundity). In women who had a cycle length that differed by > 10 days from the usual cycle length, fecundity was approximately 25% that of women who had no variation (odds ratio 0.25, 95% confidence interval 0.09 – 0.68). When the
combined effect of cycle variation and cycle length was assessed, cycle variation was a persistent strong predictor of fecundity. In conclusion the mechanisms of the present findings probably are female functional disturbances in ovulation, conception, implantation, or sustained pregnancy, linked with variable menstrual cycle length. Thus, identification of medical and environmental causes of abnormal menstrual cycle patterns may provide clues to the causes of infertility. Moreover, the menstrual cycle pattern also should be taken into consideration in the clinical decision – making process.

To provide an overview of exercise – induced reproductive of dysfunction and an approach to evaluation and management a Med-line search was performed to review the related articles from 1996 to 1998 by Chen and Brzyski (1999). It was concluded as exercise induced menstrual irregularity appears to be multi factorial in origin and remains a diagnosis of exclusion. Clinical manifestations range from luteal phase deficiency to anovulation, amenorrhea, and even delayed menarche. Most cases are reversible with dietary and exercise modifications. (Chen and Brzyski 1999).

Ovarian reserve screening identifies women with greatly diminished chances of achieving pregnancy. The screening techniques include the clomiphene citrate challenge test, based day 3 FSH measurements, and the GnRH against stimulation test. All have been evaluated in assisted reproduction programs and the predictive values of an abnormal test for failing to conceive are very high. When abnormal, these test allow physicians to counsel patients that their prognosis for conception, an age-related decline in fecundity remains and patient age should still be considered when counseling patients with normal screening results. Clinicians are urged to validate the threshold values with the assay system used in their own laboratory before the application of these tests. The literature consistently demonstrates the value of diminished ovarian reserve screening. (Scott and Hofmann 1995).

The bio-chemical and questionnaire based stress of infertile women was measured by Harlow et al (1995). Median baseline, follicular phase and pre-operative serum
prolactin (229, 311 and 457 mIU/I) cortisol 9278,369, and 496 nmol/I) and state anxiety score (38, 40 and 49) respectively all increased during stimulated IVF treatment. There was no such increase in a control group having similar laparoscopic surgery unrelated to infertility, suggesting that anxiety levels are greatest in IVF, and adequately by anxiety scores.

Research studies by Speroff, (as cited in Angard 1999) shows that among female problems, the most common factors for infertility are tubal and uterine pathology (40%); ovulatory dysfunction (40%) and unexplained infertility or unusual problems such as anatomic, genetic or auto immune (20%).

Personality characteristics, psycho endocrinological stress responses and course and outcome of treatment were investigated in 40 women undergoing In Vitro Fertilization. In addition to classification by the major causes of infertility (mechanical infertility or male infertility), the subjects were also divided in two subgroups of 17 women with completely ‘normal’ menstrual cycles and 23 women with subtle disturbances of their menstrual cycle. These unruptured follicle syndrome or luteal phase insufficiency women with subtle cycle disturbances have been shown to have a lower pregnancy rate in In Vitro Fertilization than women with normal cycles. The correlation of the state anxiety level of the patient in the early follicular phase with negative outcome in IVF is seen to be higher in women with subtle cycle disturbances. Furthermore, prolactin concentrations are always higher in women with subtle cycle disturbances. The data contribute to the hypothesis that subtle cycle disturbances, i.e. LUF syndrome, luteal phase insufficiency and endometriosis could be associated with higher psycho endocrinological stress levels. (Demyttanaere et al 1994).

The psychological and the hormonal response to a specific emotional stressor (a video film on treatment of infertility, pregnancy and delivery) was investigated in 30 women and the responses were correlated with their trait anxiety level. The psychological response, i.e., the change in state anxiety was in phase with the stressor and varied with the trait anxiety level. The endocrinological response, i.e., the time courses
of prolactin, cortisol and testosterone was not in phase with menstrual cycle but varied with trait anxiety level. (Demyttanaere, Nijs and Keibooms 1989).

Patients failing to ovulate and conceive on Clomiphene Citrate (CC) or CC plus Human Chorionic Gonadotropins (HCG) or patients with pituitary gonadotropins deficiency are candidates for Human Menopausal Gonadotropins (HMG) plus HCG therapy. The duration and number of ampoules needed to stimulate ovarian response leading to ovulation and / or pregnancy vary individually. Seventy – one patients who had complete follow – up evaluation and accurately documented body weights at the time of therapy were considered for the study. Of these 71 patients, 41 (57.3%) conceived in 293 cycles. The average number of ampoules of HMG used by patients with 10% to 20% below Ideal Body Weight (IBW) was 13.9 + standard deviation [SD]). The average number of ampoules used by patients with normal + 10% IBW was 14.2+ 3.5. Patients who were overweight by 10% to 25% used 15.3+ 5.4 ampoules, and patients overweight by ≥25% used 20.9 + 5.6 ampoules of HMG. Eleven patients with severe hypothalamic chronic anovulation needed an average of 20.6+6.2 ampoules. The data reveal a direct relationship between IBW and the amount of HMG needed to induce ovulation and / or pregnancy; however, in the presence of chronic hypo estrogenic conditions, it is expected that these patients will need higher amounts of HMG, regardless of body weight. (Chong, Rafael and Forte 1986).

Couples requesting In Vitro Fertilization (IVF) may be sexually dysfunctional either as an etiologic factor in their infertility or because they experience decreased sexual satisfaction as a reaction to previous infertility treatment. The present study assessed the sexual functioning and psychological status of 45 married couples who had requested IVF. The couples were given complete psychosexual evaluation by senior staff members of the Sexual Behaviors Consultation Unit and each participant completed the Derogatis Sexual Functioning Inventory (DSFI). Seven couples (15.5%) were experiencing a sexual dysfunction and 13 individuals (14.4%) were given Diagnostic and Statistical Manual of Mental Disorders III diagnoses. In total, 19 individuals (215) of the
sample were found to have either a sexual dysfunction or psychological disorder. Couples with a sexual dysfunction were more likely \( (P = 0.05) \) to have unexplained infertility. Norms for psychological evaluation as part of IVF are suggested and the role of such evaluation discussed. (Fagan et al 1986).

2.3. **Psycho-social Dimensions of Infertility**

This section includes literature that described psycho-social dimension of infertility such as, personality profile, emotional trauma, distress and depression, stress, marital adjustment and family support.

Donkor (2011) conducted a survey using face to face interviews in three languages with 615 women receiving infertility treatment. The aim of the research is to investigate the extent to which women seeking infertility treatment themselves and in order to investigate the relationship between stigma and infertility related stress. As a result the majority 64 per cent of women in the sample felt stigmatized, multiple regression analysis indicated higher level of perceived stigma were associated with increased infertility related stress. Women with higher education felt less infertility related stress.

High-quality care for patients faced with infertility should be patient-centered. Few studies have provided in-depth insights into the patient's perspective on care and, to the best of our knowledge; no study has provided a model of the complex concept ‘patient-centered infertility care’. Therefore, a qualitative study aimed at understanding ‘patient-centered infertility care’ from the patient's perspective was conducted. Fourteen focus group discussions were organized with patients \( (n = 103) \) from two European countries to find out about patients’ positive and negative experiences with infertility care. Content analysis of the transcripts and analysis of patients’ priority lists were conducted. The patient-centeredness’ of infertility care depends on 10 detailed dimensions, which can be divided into system and human factors, and there is a two-way interaction between both kinds of factors. System factors, in order of patient's priority, are: provision of information, competence of clinic and staff, coordination and integration, accessibility, continuity and transition and physical comfort. Human factors,
in order of patient’s priority, are: attitude of and relationship with staff, communication, patient involvement and privacy and emotional support. (Dancet et al 2011).

To examine potential differences in quality of life between infertile women and men a descriptive, cross-sectional design study was conducted by Bolsoy, Taspinar, Kavlak and Sirin (2010). A questionnaire was used to collect individuals' socio demographic data; the World Health Organization Quality of Life BREF (WHO QOL-BREF) tool was used to collect information about quality of life. The research sample comprised 248 infertile individuals (141 women and 107 men). The research was conducted at the Ege University Family Planning and Infertility Research and Training Center Infertility Clinic in Izmir, Turkey. Physical health, psychological health, and social relations domain scores mean did not show significant differences between infertile women and infertile men (P > .05). However, scores mean for the environment domain were significantly higher (P < .05) for infertile women than for infertile men. Unemployed infertile men had significantly lower scores mean in the physical health and social relation domains (P < .01). No such significant differences were found for the other quality of life domain scores for infertile women or infertile men (P > .05).

A descriptive correlated study conducted by Ehsanpour et al (2009) up on 75 couples (150 subjects to analyze experiencing infertility is a crisis in couple life, affecting all aspects of their life, going through infertility treatment is also associated with psychological, social and economic stress. The data were collected by questionnaire completed by interview regarding personal, social characteristics, infertility treatment stress and social support. The result revealed that the mean score of infertility treatment related stress was 58.68%. Eighty-six per cent of the couples experienced average to severe stress in professional treatment of infertility. Then highest and lowest scores of social support were 23.28% and 84.45% for spouse support and 2nd and 3rd level relative respectively. There was an increase 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.
Bayley, Slade and Lahsen (2009) conducted a prospective longitudinal study of emotions and relationship in In Vitro Fertilization treatment. One hundred and forty four couples emotional and relationship assessment were done. Emotional assessment at the time of pre oocytes recovery and post embryo replacement within each treatment cycle. The result revealed that high level of confusion and bewilderment found during the initial cycle and emotional difficulties after failure of IVF treatment.

Lechner, Bolman and Dalen (2007) investigated 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 results showed that women especially 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.

Infertility treatment and marital relationships among successfully treated ART couples and their controls were evaluated (Repokari et al 2007) and found no between-group differences in marital satisfaction and dyadic cohesion. Dyadic consensus deteriorated among control group women. The shared responsibility of infertility may even stabilize the marital relationships.

Infertility, besides being a medical condition, is a social situation. Infertility is a low-control, chronic stressor with severe long-lasting negative social and psychological consequences. Achieving a pregnancy/delivery after assisted reproduction technology treatment is associated with increased mental well-being. Treatment failure is associated with increased levels of anxiety and depression during the treatment period and after end of treatment. It is still unclear whether depression and/or fertility problem stress is related to treatment outcome. Some infertile couples experience marital benefit, i.e., that the infertility brings the partner closer together and strengthens their marriage. Appraisal-oriented coping strategies including emotional coping are predictors of lower fertility
problem stress. Long-term studies among involuntary childless women in previous unsuccessful treatment show that although most adjusted well psychologically the childlessness was a major life theme. Fertility patients are, in general, satisfied with fertility treatment. However, the satisfaction ratings are in general higher with the medical care than with the patient-centered care. Fertility patients express a need for oral and written information about treatment as well as psycho-social consequences of infertility and for improvements in patient-centered care and access to professional psycho-social services if needed. Drop-out rates of treatment are high and are mostly related to the psychological burden. In order to decrease drop-out rates, and hence increase delivery rates after fertility treatment, it is important to further develop user friendly treatment programs. (Scmidt 2006)

To identify gender differences in coping responses and the association between coping and psychological distress in couples undergoing IVF a study was conducted by Pottinger et al (2006). It was found that women coping with infertility may be at risk for self depreciation and isolation because of their choice of coping strategies and the meaning they ascribe to the infertility. As a result they were likely to experience more stress than men who are infertile. Counselling that is specific to gender needs is recommended.

Anderheim, Holter, Bergh and Moller (2005) conducted a study to investigate the effect of psychological stress before and during IVF treatment on the outcome of IVF, controlling for known physiological predictors. This was a prospective, longitudinal study. A total of 166 women were studied during their first IVF treatment. They answered questionnaires concerning psychological and social factors on two occasions. Psychological well – being was measured by the Psychological General Well – Being (PGWB) index and psychological effects of infertility were assessed by 14 items. In the analysis of the psychological variables, no differences were found between pregnant and non – pregnant women. The total number of good quality embryos, the number of good quality embryos transferred, and the number of embryos transferred were significantly higher in the pregnant than in the non – pregnant group. In a multivariate analysis, the
number of good quality embryos transferred was the only variable that was independently associated with pregnancy. They found no evidence that psychological stress had any influence on the outcome of IVF treatment. When counseling infertile couples, it might be possible to reduce the stress they experience during the treatment procedure by informing them of these findings.

The diagnosis of infertility and concurrent medical treatment may inflict an array of negative emotional symptoms in infertile persons. Evidence for the positive effects of psychotherapy on negative affect and also possible influence on conception rates has been discussed in several studies. Meta – analyses were conducted in order to evaluate the efficacy of group and individual / couple therapies on (i) the reduction of negative emotional symptoms, and (ii) the possible promotion of pregnancy. Group and individual / couple psychotherapy led to a decrease in feelings of anxiety. Upon termination of psychotherapy, a reduction of depressive symptoms in patients was greater after 6 months. Psychotherapy accompanying IVF treatment yielded similar conception success rates to psychological interventions administered to patients not in specific medical care. Results are suggestive of positive effects of psychotherapy for infertile patients. However, these results must be viewed with caution due to methodological and informational bias within the studies analyzed. (De Liz and Strauss 2005).

Matsubavashi et al (2004) reported that infertile women in Japan as well as in the Western world have high levels of emotional distress, anxiety, and depression. The reactions for anxiety and depression in infertile women are easy to presume but remain unclear. They conducted the present study to assess the relationship between the anxiety and depression of infertile Japanese women and their thought processes and emotional well-being with regard to their infertility. A cross-sectional questionnaire was administered to 101 infertile Japanese women who visited the infertility clinic at Tokai University. Inventories included the Hospital Anxiety and Depression Scale (HADS) and original Infertility Questionnaire which is composed of 22 questions to assess attitudes and emotional status in facing the stigma of infertility. After factor analysis, comparison between the HADs and the infertility Questionnaire was made with simultaneous
multiple regression analyses. Anxiety and depression in childless Japanese women were significantly associated with lack of husband’s support and feeling stress. The finding should prove useful in designing and implementing psychological support programs for infertile Japanese women. Psychological interventions to relieve or diminish these conditions might have significant therapeutic benefits for women attending infertility clinics in Japan.

To evaluate the hypothesis that infertility may result in a decrease in quality of life and an increase in marital discord and sexual dysfunction a study was conducted by Monga et al (2004). The burden of infertility is physical, psychological, emotional, and financial. Couples seeking treatment for infertility were asked to complete standardized validated questionnaires assessing quality of life (Quality of Well-Being Scale-Self Administered, version 1.04), Marital adjustment (Locke-Wallace Marital Adjustment Test), and sexual function (Brief Index of Sexual Functioning for Women and International Index of Erectile Function for Men). Couples seeking elective sterilization served as the control subjects. Eighteen infertile couples and 12 couples seeking elective sterilization participated in the study. The mean age, years together, and household income were comparable. Infertile couples had made a mean of 14.5 office visits for infertility, and 83% of couples reported feeling societal pressures to conceive. The Marital Adjustment Test scores for the women of the infertile couples were significantly lower than the scores of the controls (P=0.01); however no difference was noted in the men. A trend toward lower quality-of-life scores was noted in women (P=0.09) but not in the men of infertile couples. No statistically significant impact on sexual functioning in women was noted; however, the men in the infertile couples had lower total International Index of Erectile Function scores (P=0.05) and Intercourse Satisfaction Scores (P=0.03). Women in infertile couples reported poor marital adjustment and quality of life compared with controls. Men may experience less intercourse satisfaction, perhaps because of the psychological pressure to try to conceive or because of the forced timing of intercourse around the woman’s ovulatory cycle.
One hundred and twenty infertile couples (30 each among unexplained infertility, an ovulation, tubal factor, and male factor groups) and 30 infertile couples as controls were evaluated for psychological assessment by different psychological test instruments. Initial evaluation was done at recruitment, followed by reassessment at 3, 6, 9 and 12 months during the infertility work-up, and at the end when the specific diagnosis and the management and prognosis were disclosed. 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 led to depression in the female partner. In cases of organically caused infertility, partners were worried about the other’s reaction. Anxiety was significantly greater in the partner with the fertility problem than in the other partner. Life events were significant in the partner in whom the fertility problem was detected. Periodic psychological assessment was not affected by infertility work-up on the male partner in any of the groups, whereas an ovulation and tubal factor infertility showed a significant psychological effect on the female partner at the end of work-up. Depression and anxiety in the female partner were evident soon after the investigation started. (Dhaliwal, Gupta, Gopalan and Kulhara 2004)

Weiss, Mateju and Urbunek (2004) conducted a study to estimate the basic personality and couple characteristics of men and women from infertile marriages. Research design was psychodiagnostical study. Setting was Institute of Sexology, 1st Medical Faculty, Charles University, Prague, Iscare IVF, Prague. Thirty eight couples applying for assisted fertilization were psychologically examined by standard psychodiagnostical methods. Men and women from infertile couples displayed moderate abnormal behavioral characteristics, men from these couples are more neurotic than general population, women display more anxiety and social desirability. The relations in these marriages are not substantially disturbed and are even less conflictions and the consistency of the male and female roles is even better than in general population. Men from infertile couples are perceived by themselves as well as by their wives as less masculine. In men and women from examined couples there were no serious personality
anomalies and the relations in these marriages were not substantially disturbed by infertility.

Coefﬁn-Driol and Gianic (2004) reviewed the literature on the psycho-social impact of infertility and its treatments by the ART on the marital sexuality, by paying special attention to the relationship between gender and the infertility experience. It is convenient to divide this literature into articles that explore the sexual life of the infertile couples on the one hand, and those focusing on the couple relationship-marital satisfaction and marital adjustment, on the other hand. The literature on the infertile couples’ sexuality and sexual satisfaction, mostly descriptive, presents infertility as deleterious experience for both women and men even if the repercussion differ according to gender, with correlative dynamic effects within the couple. The contributions to the investigation of the couple relationship, mostly quantitative Anglo-Saxon studies, have produced equivocal or contradictory results concerning the satisfaction with the relationship, the closeness between the two partners so that it is difﬁcult to assume a trend in this ﬁeld. This situation is largely due to the problems of sampling. In this view, future research should perform its methodological apparatus to take into account the processual nature of the infertility experience, at both levels of couple history and its involvement in the ART process.

Using path analysis and hierarchical linear modeling, the authors evaluated the associations between both partners’ level of depression and anxiety, as measured by Minnesota Multiphasic Personality Inventory-2 (MMPE-2) content scales, and both partners’ level of marital satisfaction among married couples (N = 774) that participated in the MMPI re standardization study. Results indicated that marital satisfaction was predicted by the person’s own level of anxiety and depression (i.e., actor effects) and by his or her spouse’s level of depression only (i.e., partner effects). Findings also indicated that (a) there were no signiﬁcant gender differences in the magnitude of effects, (b) depression effects were signiﬁcantly stronger than anxiety effects, (c) actor effects were signiﬁcantly stronger than partner effects, and (d) there were interactions between actor and partner effects for depression only. (Whisman, Uebelacker and Weinstock 2004).
To assess the emotional impact of infertility after successful IVF and to compare parents who have undergone IVF (IVF parents) and parents who have not undergone IVF (non – IVF parents) regarding parental stress and the marital relationship during the transmission to parenthood, a study with qualitative and longitudinal quantitative assessments was done by Hjelmstedt et al (2004). Fifty-five IVF mothers, 53 IVF fathers, 40 non – IVF mothers, and 36 non – IVF fathers took part in the study. IVF parents were interviewed. All subjects completed self – rating scales in early pregnancy and at 2 and 6 months postpartum. Interviews about perception of infertility and scalar measurement of parental stress and the marital relationship. Negative feelings related to infertility were not easily overcome among the IVF parents. Their levels of stress related to parenthood were similar to those of non – IVF parents, and both groups reported decreased satisfaction with the marital relationship during the transition to parenthood. The inability to conceive naturally continues to affect the current lives of a proportion of IVF parents. The results suggest that IVF parents may benefit from counseling with regard to the potential long – term impacts of infertility, disclosure issues, and decisions regarding future children. However, levels of parental stress and patterns of partner satisfaction are similar to those of parents with children conceived “naturally”.

Jones et al (2004) studied the psychometric properties of the Polycystic Ovary Syndrome Questionnaire to measure the health-related quality of life (HRQOL) of women with polycystic ovary syndrome. To assess reliability and validity, women recruited from an outpatient gynecology clinic at Jessop Wing, Royal Hallamshire Hospital, Sheffield completed two copies of the PCOSQ and the Short Form-36 (SF-36). Secondary factor analysis was carried out to verify the composition of the dimensions. Semi-structured interviews were conducted to assess face validity of the 92 women who consented, 82 women (89%) returned questionnaire at time 1, and 69 women (75%) returned questionnaire at time 2. All five PCOSQ dimensions were internally reliable with Cronbach $\alpha$ scores ranging from 0.70 to 0.97. Intra-class correlation coefficients to evaluate test-retest reliability were high (range 0.89-0.95, P<0.001). Construct validity was demonstrated by high correlation for all comparisons of similar
scales of the SF-36 and PCOSQ (0.49 and 0.54). Acne was identified as an important area of HRQOL missing from the questionnaire. The PCOSQ is a reliable instrument for measuring the HRQOL in women with PCOS. However, the validity of the questionnaire needs to be improved by incorporating a dimension on acne into the instrument.

Little is known about the prevalence of specific depressive and anxiety disorders in women before a new course of assisted reproductive technology treatment. Few studies have adopted the proper psychiatric diagnostic procedures. All consecutive women visiting the assisted reproduction treatment course were recruited. A psychiatrist made a diagnosis of psychiatric disorders using a structured interview, the Mini-International Neuropsychiatric Interview (MINI). Of a total of 112 participants, 40.2% had a psychiatric disorder. The most common diagnosis was generalized anxiety disorder (23.2%), followed by major depressive disorders (17.0%) and dysthymic disorder (9.8%). Participants with the psychiatric morbidity did not differ from those without in terms of age, education, income or years of infertility. Women with a history of previous assisted reproduction treatment did not differ from those without in depression or anxiety. Depressive and anxiety disorders were highly prevalent among women who visited an assisted reproduction clinic for a new course of the treatment. Demographic features and a history of previous assisted reproduction were not risk factors for these psychiatric morbidities in the assisted reproduction clinic.

(Chen, Chang, Tsai and Juang 2004)

The recognition of the distressing character of infertility diagnosis and treatment has led to the development of several psycho-social intervention for infertile couples. At the Leuven University Fertility Centre, a body-mind marital group intervention was developed by Lemmens et al (2004) to help infertile couples cope with the distress related to infertility. This treatment was originally adapted from a mind-body approach, but integrated concepts and techniques from body-oriented therapy, art therapy and multi-family group therapy. In this paper therapeutic foundations, treatment goals and practical implications of the mind-body marital group interventions are outlined. Further, the
treatment procedure is explained in detail and illustrated by clinical vignette. Although the first clinical impressions about the usefulness of the body-mind group programme infertility clinics seem promising, further the research is needed to assess its effectiveness.

ICSI is used with increasing frequency, but there is less information about the children born following this method of assisted reproduction than other forms of IVF. Some authors have suggested that it may contribute to more family stress than IVF. In this study by Barnes et al (2004) ICSI conceived children were compared with IVF conceived children and Naturally Conceived (NC) controls. They were selected in five European countries: Belgium, Denmark, Greece, Sweden and the UK, and seen for psychological testing and a pediatric examination when they were 5 years old. The parents were asked to complete the questionnaires about parental Well-Being, family relationships, parenting and child behaviour. In the results very few differences were found between the ICSI and NC group or the ICSI and IVF group. The only significant differences were that mothers in the ICSI conceived group reported fewer hostile and aggressive feelings towards the child and higher levels of commitment to parenting than the mothers of NC children.

Specific subgroups of people planning IVF might be at risk of having more psychological health-related problems. Identification of subgroups at risk may better enable allocation of appropriate counseling. A group of 425 men and 447 women planning to undergo IVF treatment filled out a questionnaire. Four domains of health-related quality of life were measured, namely perceived emotional, physical, cognitive and social functioning. Young men and women (aged 21 – 30 years) planning IVF had more short-term social and emotional problems than people of the same age group in the general population. No substantial differences were found in cognitive and physical functioning for all age groups of men and women planning IVF compared with the general population. A high level of irrational parenthood cognitions substantially accounted for a less optimal score on all the different domains of quality of life. These
cognitions (‘needing a child in order to live a happy life’) were especially prevalent among younger women. Patients with high levels of irrational parenthood cognitions are at risk of a less optimal quality of life. A short cognitive counseling therapy is advised for patients with high levels of these cognitions. (Fekkes et al 2003).

Hsu and Kuo (2002) conducted a study to explore the following objectives for infertile couples receiving infertility treatment: differences between wives and husbands in their emotional reactions and coping behaviors. This research, using structured questionnaires, was based on 120 infertile couples attending the Intra Uterine Insemination (IUI) or the In Vitro Fertilization-Embryo Transfer (IVF-ET) program. The research instruments consisted of Demographic Data Form, Profile of Mood States (PoMS), and Ways of Coping Questionnaire. The research results showed that infertile wives experienced more emotional disturbance than husbands did, as shown in the four subscales of Tension-Anxiety, Depression-Dejection, Anger-Hostility, and Fatigue-Inertia, as well as the total scale of PoMS. It was also shown that wives adopted more coping behaviors to deal with infertility and treatment than husbands did, as revealed in the subscales of Self-Controlling, Seeking Social Support and Escape-Avoidance and the total scale of the Ways of Coping Questionnaire. All of the above reached significant statistical differences. The emotional reactions of infertile couples varied with the differences in education levels, duration of treatment, number of treatments received, and number of existing children. The emotional reactions of infertile husbands had a significantly positive correlation with the factors Confronting, Accepting Responsibility, and Escape-Avoidance. The emotional reactions of wives had a significantly negative correlation with Positive Reappraisal. The research results can provide clinical staff with a correct understanding of the differences between husbands and wives in emotional reactions and coping behavior, as well as related factors, to help them to provide better medical treatment.

To test a theoretical model of the effect on marital communication and adjustment of men’s and women’s approach to infertility a study was conducted by Pasch, Shetter
and Christensen (2002). A cross-sectional research design involving interviews, questionnaires, and a marital discussion task was used. Forty-eight couples currently seeking infertility treatment were the subjects. Main outcome measure was quality of marital communication during marital discussion task and effect of infertility on the marriage. Results showed that having children was more important to wives than husbands; wives were more involved in trying to have a baby, wanted to talk with their partner more about trying to have a baby, and experienced a greater loss of self-esteem than did their husbands. To the extent that husbands saw having children as important, were involved in trying to have a baby, or wanted to talk with their wives about trying to have a baby, the quality of marital communication when discussing infertility was less negative, and in turn, wives perceived a more positive effect of infertility on their marriage. It was concluded that increases in husbands’ interest and involvement in fertility treatment may lead to positive changes in couple communication about infertility and to a more positive effect of infertility on the marriage.

Although several authors have suggested an important pathogenic role for psychosocial factors in ‘functional’ infertility, the extent to which depression, anxiety and expressed emotional patterns correlate to infertility is not yet clear. This study (Fassino et al 2002) included 156 infertile couples (recruited at intake) and 80 fertile couples, whose personal characteristics were recorded. They were examined using scales for the evaluation of the degree of psychopathology [Hamilton Anxiety Rating Scale (HAM-A), Hamilton Depression Rating Scale (HAM-D)] and anger expression [State – Trait Anger Expression Inventory (STAXI)]. The 156 infertile couples were then subdivided into groups based on the cause of infertility (‘organic’, ‘functional’ or ‘undetermined’). The psychometric evaluation was double – blind with respect to the causes of infertility. Differences emerged in the degree of psychopathology between ‘organic’ and ‘functional’ infertile subjects and fertile controls. In women, logistic regression identified three variables able to predict the diagnosis subtype: these variables are HAM-A, HAM-D, and tendency toward anger suppression. In men, anger did not emerge as a predictor for diagnosis, whereas HAM-A, and HAM-D, did. The ‘functional’ infertile subjects of
this sample showed particular psychopathological and psychological features, independent from the stress reaction following the identification of the cause of infertility.

The subjective well-being of infertile couples is affected by numerous variables. One hundred and ten infertile couples were investigated using the Von Zerssen Symptom checklist. With the exception of sterile women of fertile men (group 1: female infertility), women and men in the overall randomized sample and the diagnostic groups (group 2: sub fertility of the man; group 3: sterility of both partners; group 4: idiopathic sterility) report fewer general symptoms than the overall population of patients with somatic and psychiatric diseases. Sub fertile men show lower rating in the symptom checklist than the norm. Involuntarily childless women express more symptoms than their partners. (Kowalcek et al 2001).

Gender differences and similarities in psychological reactions related to infertility, perception of social support, the effect of infertility on the marital relationship and coping-style were investigated among Swedish couples seeking In Vitro Fertilization or Intra Cytoplasm Sperm Injection (ICSI) treatment. Ninety one couples entering treatment completed the Infertility Reaction Scale, a self–report questionnaire with structured and open – ended questions and the Miller Behavioral Style Scale. The women reacted more strongly to their infertility than the men as measured by the Infertility Reaction Scale (P<0.05). Factor analysis of the Infertility Reaction Scale produced three factors for men and women respectively. The first factor that emerged for the men was “The male role and social pressure” and the second factor was ‘The major focus of life’. For the women the two first factors were reversed compared to those of the men. The third factor ‘Effect on sexual life’ was similar for men and women. Significantly more men than women had not confided in anyone about their infertility problem (P<0.001). The information-seeking coping style was significantly correlated with infertility distress only among men (p<0.05). The women reacted more strongly to their infertility than the men and they felt an intense desire to have a child. They received more social support than their partners,
who experienced the fulfillment of the male role as well as the social role to become a parent as the most central aspects of infertility. The information seeking coping style was significantly correlated with infertility distress only among men. (Hjelmstedt et al 1999).

The aim of the study by Ardenti et al (1999) was to study the emotional impact of In Vitro Fertilization (IVF) and any possible influence due to the type of diagnosis, duration of infertility, number of cycles and type of responses to treatment. The study was carried out on 200 patients admitted to hospital for the final stages of IVF (oocyte retrieval and embryo transfer). The psychological measures taken into consideration were: state and trait anxiety levels (Strait – Trait Anxiety), unconscious and symptomatic anxiety, perception of self and of others (EWI). Monitoring of anxiety levels during hospitalization highlighted significant differences with respect to the state anxiety values (P< 0.01) and general anxiety (P<0.05), but not with respect to trait anxiety. The level of state anxiety of women with a diagnosis of infertility was significantly lower (P<0.05). Women who have experienced infertility of medium to long duration presented a significantly lower state anxiety value (P<0.01). The failure of oocyte fertilization determines a significant increase in state anxiety level (P<0.01). There were no significant differences in anxiety values with respect to the cycle number. Perceptive functioning was normal.

In a survey (Oddens, Tonkelaar and Nieuwenhuyse 1999) involving 281 patients awaiting assisted reproduction treatment at five centers in three countries, and 289 population controls, investigated whether the patients had experienced more negative emotional feelings and negative emotional impact during periods when they were attempting to conceive as compared with the controls, and whether there was any difference in their well – being at the time of consultation. The study was performed in the context of currently divergent views as to the burden of fertility problems. The survey was carried out using questionnaires of the self – administration type. Women with fertility problems did in fact consistently report a higher prevalence of negative emotions than the controls with reference to the periods during which they had been trying to
conceive. Patients reported more changes in inter partner relationships (either negative or positive). Sexuality was negatively affected among the patients. At the time of consultation, the patients had less favorable scores than the controls on scales for depressed mood, memory / concentration, anxiety and fears, as well as for self – perceived attractiveness. One in four (24.9%) of the patients had scores indicating depressive disorders as compared with only 6.8 per cent of the controls. Current well – being was even more markedly affected in patients with previous unsuccessful In Vitro Fertilization (IVF) experience. The ‘infertility’ life event was perceived as severe by both patients and controls. Both prior to consultation and during diagnosis and treatment, women with fertility problems had a higher prevalence of reported negative psycho – emotional experiences than women without fertility problems.

To develop a reliable, valid instrument to evaluate perceived infertility – related stress a prospective study was conducted by Newton, Sherrard and Glavac in 1999 among 1153 women and 1149 men on infertility treatment. Participants’ infertility – related stress was assessed by written questionnaire using the Fertility Problem Inventory. Current levels of anxiety, depression, and marital satisfaction also were determined. Women described greater global stress than men and higher specific stress in terms of social concerns, sexual concerns, and need for parenthood. Both men and women facing male infertility reported higher global stress and more social and sexual concerns than men and women experiencing female infertility. Social, sexual, and relationship concerns related to infertility were more effective predictors of depression and marital dissatisfaction than expressed needs for parenthood or attitudes toward child – free living. The Fertility Problem Inventory provides a reliable measure of perceived infertility – related stress and specific information on five separate domains of patient concern. Patterns of infertility – related stress differed depending on gender, fertility history, and infertility diagnosis. Among patients receiving treatment, social, sexual, and relationship concerns appear central to current distress. Counseling interventions that target these domains appear likely to offer maximal therapeutic benefit.
The purpose of the study by Boivin, Scanlon and Walker (1999) was to examine the sources of support that infertile patients relied on when distressed, and the factors that prevented them from using psycho-social counseling. The sample consisted of 143 infertile patients (49 couples plus 45 additional women) who were in their mid-thirties and had been infertile for approximately 6 years. Before their clinic appointment, participants completed (anonymously) a short questionnaire concerning various sources of support and factors related to the uptake of counseling. The results showed that patients relied primarily on their spouse and family when distressed, rather than on formal support resources such as psycho-social counseling. The principal reason preventing patients from using counseling varied as a function of current distress level. Less distressed patients reported that the coping resources available to them were sufficient to cope with the strains of infertility, while the more distressed patients failed to initiate contact with a counselor because of practical concerns such as knowing who to contact and/or the cost of counseling. The findings of this study indicate that alternative ways of intervening with infertile patients would need to be developed, as few use the type of psycho-social services most frequently offered.

In a study by Kerr, Brown and Balen in 1999, questionnaires were sent to 2000 members of two of the largest national infertility support organizations as part of the National Infertility Awareness Campaign (NIAC), 1997. A total of 980 Questionnaires were completed and returned to the market research company, Ballington Hall. Some 69 per cent of the respondents were aged between 30 and 39 years. One-third of the couples had been trying for a baby for more than 3 years, including one-tenth who had been trying to conceive for more than 10 years. Some 40% of respondents were successful in conceiving, although a significant proportion of these took more than 6 years. About 75% of those surveyed had been forced to pay for some or all of their infertility treatments and investigations, whereas 18% had their treatments funded fully by the National Health Service (NHS). Funding sources for the remaining 7% were unknown. Just over one-third of respondents felt that their GP provided sufficient information about the causes of infertility investigations and treatment, while the majority said that their specialists had
been helpful. 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 was experienced by respondents. One in five said 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. Some 71% said that they would request counseling if it were offered free, but only 12% had been provided with free counseling on the NHS.

Shafford et al (1998) described a study to assess the role of infertility diagnosis in differentiating participants in an In Vitro Fertilization program on psychological variables. Three hundred forty eight In Vitro Fertilization candidates representative of five diagnostic categories (tubal problems, endometriosis, male factor, multiple factors, and idiopathic) underwent psychological assessment before entering the In Vitro Fertilization program. Measures of personality functioning, depression, anxiety, social support, coping ability, and marital adjustment were obtained. Analyses revealed significant differences among diagnostic groups on several psychological measures. As well, candidates were categorized as having either organic or functional (idiopathic) infertility, and analyses revealed several differences between these two groups. Results suggest ways of providing individualized psychological support In Vitro Fertilization participants.

Boivin et al (1998) conducted a study to compare the psychological reactions of men undergoing Intra Cytoplasm Sperm Injection (ICSI) (n = 18) or In Vitro Fertilization (IVF) (n=22). Men monitored their psychological reactions daily for one complete treatment cycle from the first day of down – regulation until the outcome of treatment was known (approximately 52 days). The results showed that ICSI patients reported marginally more distress on the days prior to retrieval than the IVF patients. Other than this difference the pattern of results indicated that the psychological reactions of men undergoing ICSI or IVF were similar and that there was no need to manage these patients
differently during treatment, However, ICSI patients may benefit from some reassuring comments on the days prior to retrieval when they showed more anticipatory anxiety.

The psychology of infertile women was investigated with a battery of psychological tests consisting of a semi structured interview, State Trait Anxiety Inventory (STAI), Center for Epidemiologic Studies Depression Scale (CES-D) and Cornell Medical Index (CMI). The subjects were 107 infertile women being treated for infertility. The semi structured interviews revealed that the stress factor for infertile women changes with the length of infertility. In the early states, the main stress is related to a physical inferiority complex, while later it changes into stress about what others outside the family say. According to STAI, CES-D and CMI, infertile women are considered to become more depressive the longer treatment persists. Therefore, counseling for infertile women should be adapted to long term treatment (Chiba et al 1997).

To evaluate the psychological adjustment of infertile women compared with a control group of mothers and to determine which personal or marital factors influence the amount of emotional disorders in the infertile group a study was conducted by Bringhenti et al (1997). Cross – sectional questionnaire study with a group of infertile women and a group of mothers attending a routine gynecological examination were the study participants. Infertile women and mothers received the questionnaires after a psychological or medical examination respectively, at a Sterility Center in a Department of Obstetrics and Gynecology. One hundred and twenty – two infertile women, entering an IVF program and 57 mothers attending a routine care visit was the sample size. Stressful events, self – esteem, job and marital satisfaction, care and control measures of intimate bond, state – trait anxiety, depression, psycho physiological symptoms and global emotional factor scores were the main outcome measures. The organic infertile group was higher than mothers with satisfied relationship with their husbands, perception of care and state – anxiety. The emotional factor scores of infertile women, controlled for stressful events, were influenced by (a) number of IVF – cycles and availability for
adoption, (b) job position, job satisfaction and self-esteem, (c) personality dimensions. State and trait anxiety scores were influenced by the level of global marital satisfaction. Thus infertile women, entering an IVF treatment program, do not necessarily show signs of psychological maladjustment. Their level of state anxiety can be considered a situational response to the treatment stress. The infertility condition and its treatment can be effectively dealt with by women having a good personality disposition, a high level of self-esteem, who are satisfied with their job and relationship with their husband, and who are willing to adopt a child as a last solution for their maternal need.

The purpose of the study by Boivin and Takefman (1996) was to examine the stress associated with In-Vitro Fertilization (IVF) concurrently with other physical and relational variables, and to compare these reactions with those reported during a menstrual cycle without treatment. Women (n=20) completed a daily symptom checklist for one complete menstrual cycle without treatment and one complete IVF cycle. The checklist included items related to stress, optimism, physical discomfort and marital and social relationships. Daily ratings during IVF were compared with those obtained during the no-treatment menstrual cycle. IVF was associated with more stress, optimism and physical discomfort than a menstrual cycle without treatment, and with greater changes to marital and social relationships. The pattern of results shows that the stress associated with IVF is less salient when examined in the context of reactions in other areas of functioning. The findings suggest that the emotional impact of IVF might be less pronounced during the actual treatment process than is generally assumed from studies focusing on the impact of treatment failure. Variables such as optimism and physical discomfort which have previously received less attention in the literature were significantly affected by IVF treatment.

The purpose of the investigation by Bidzan in 1995 was to analyze several personality dimensions including several psychopathological symptoms of women experiencing infertility. Seventy females experiencing infertility and 50 healthy women were examined using psychological methods: MMPI and the State Trait Anxiety
Inventory by Spielberger, Gorsuch and Lushane. Personality profiles did not differ significantly for the two groups (remained within normal limits). In comparison with healthy women, women treated because of infertility displayed significantly higher level of anxiety as a state.

A longitudinal study examined perceptions of received and provided social support and disregard among members of 248 infertile and fertile married couples. Correlation and structural equation modeling analyses were conducted. Women’s and men’s perceptions of the amount of social support they gave to and received from their partner were highly positively related. In contrast, agreement between spouses about the amount of provided support was moderate. Both social support and disregard mediated the relationships between stress and marital quality of life. Overall, highly similar patterns of results were found for members of infertile and fertile couples. These results demonstrate the perceptual element of received support and disregard as well as importance of considering the provider’s perspective. (Abbey, Andrews and Halman 1995)

In 1995 Hirsch and Hirsch conducted a study to explore the psycho-social effects of infertility and the role that social support plays over time. The major hypothesis was that although infertile persons report less contentment, lower levels of marital and sexual satisfaction, and lower self-esteem over time, those with higher levels of social support will be less affected. Four questionnaires were completed in subjects’ own homes, one every 9 months. Subjects, all of whom perceived themselves as infertile, were recruited through the national newsletter for an infertility support group. Ninety-four subjects entered the study, and 41% of the sample completed it. Main outcome measures were contentment, marital satisfaction, sexual satisfaction, self-esteem, sex-role identity, press (the measure of perceived internal and external pressures), and social support. It was found that 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 dependent measures. As a result contrary to what was hypothesized, infertile persons
experienced increased social support and greater contentment over time. As hypothesized, there was a significant positive relationship between social support and all dependent measures. The positive impact of social support, counseling, and the adoption of strategies to deal with the stress of infertility lends credence to the crucial role nurses can play in helping infertile couples cope.

In an investigation by Berg and Wilson (1995) a sample of 104 infertile couples were examined for patterns of distress among couples. Couples were separated on the basis of which spouse(s) experienced distress: Both non-distressed (33%), Male distressed (18%), Female distressed (22%), Both distressed (27%). Most couples tended to exhibit parallel functioning (60%) with both spouses functioning at similar levels, while the remainder experienced complementary patterns with one distressed and the other not. Of particular note is the finding that a substantial number of infertile couples (18%) have a distressed husband paired with a non-distressed wife, which is counter to the general assumption that infertility is more distressing to women than to men. The both non-distressed couples had the least overall psychological distress, with higher estimates of marital satisfaction. The couples from the Male distressed group had been in the treatment process less time and were drawn primarily from infertility clinics. These data illustrate the importance of considering the contextual pattern of distress in couples when considering women or men being treated for infertility.

The symptoms of 58 pregnant couples-37 with a history of infertility and 21 without a history of infertility were compared. The Symptomatology Inventory, a checklist of 42 common physical and psychological symptoms of pregnancy, was completed by each spouse from months 4 to 9 of pregnancy. For purposes of analysis, the individual symptoms were grouped into three categories: physical symptoms, negative affective symptoms, and positive affective symptoms. Although the infertile pregnant couples did not experience more symptoms than fertile couples, their pattern of reporting pregnancy-related symptoms was quite different. In terms of both number and type of symptoms, infertile spouses’ symptoms tended to be positively related. Compared to fertile couples, the infertile couples experienced symptoms globally and were more
consistent in the number of symptoms reported by each spouse. Additional research is needed to confirm these findings and to determine the implications of these differences for childbearing and the martial relationship. (Davis et al 1995)

Whether stress and infertility are linked as cause or consequence is unclear, and there is no consensus on the most appropriate methods for measuring stress in infertile women. To address this question Harlow et al (1995) measured changes in biochemical and questionnaire – based assessments of stress in infertile women. Median baseline, follicular phase and pre – operative serum prolactin (229, 311 and 457 mIU/I) cortisol (278, 369 and 496 nmol/I) and state anxiety score (38, 40 and 49) respectively all increased during stimulated In Vitro Fertilization (IVF) treatment. There was no such increase in a control group having similar laparoscopic surgery unrelated to infertility, or in women having unstimulated IVF without laparoscopy, suggesting that anxiety levels are greatest in stimulated IVF, increase as a result of the treatment, and are adequately reflected by state anxiety scores. Baseline serum prolactin in unstimulated IVF without laparoscopy, suggesting that anxiety levels are greatest in stimulated IVF, increase as a result of the treatment, and are adequately reflected by state anxiety scores. Baseline serum prolactin in unstimulated IVF (384 mIU/I) was significantly higher than control (177 mIU/I), although this was not reflected in serum cortisol or state anxiety score. Trait anxiety was constant within and between groups, suggesting that stress is not contributing greatly to the infertility. Women who achieved a pregnancy had similar state anxiety scores to those who failed, suggesting that the degree of anxiety observed during IVF treatment is unlikely to influence the chance of pregnancy. There was a trend toward lower trait anxiety in women who became pregnant, but the numbers were small.

To examine the relationship between stress and IVF outcome in women and to compare prospective ratings of IVF stress to retrospective ratings a study was conducted by Boivin and Takefman in 1995. Women completed daily stress ratings for one complete IVF cycle. Three days after the pregnancy test women completed a questionnaire that asked them to recall the stress of IVF. Based on the results of
treatment, women were assigned to the non pregnant (n=23) or pregnant (n=17) group and their daily stress ratings were compared. In addition, prospective and retrospective ratings were compared. The non pregnant group reported more stress during specific stages of IVF and had a poorer biological response to treatment than the pregnant group. It was also found that women recalled the stress of the waiting period as greater than their ongoing experience of it as measured by their daily ratings. The pattern of differences between the non pregnant and pregnant group on stress and biological factors indicate that stress is related to IVF outcome. Certain data suggest that negative feedback about the progress of treatment communicated to patients responding poorly to IVF (non pregnant group) may have increased their stress level. However, the direction of causality between stress and IVF outcome remains speculative. Differences between prospective and retrospective stress ratings may reflect women’s attempt to cope with the strain of the waiting period.

There is growing recognition of the existence of an interaction between the psycho-social status of women and their (in) fertility. This has prompted study of the psycho-social aspects of In Vitro Fertilization (IVF). Following a literature survey, a psycho-social questionnaire was constructed using existing tests and a specific IVF attitude questionnaire was developed. This questionnaire was completed by 150 new IVF women who were participating in a multicenter study. The newly – developed specific IVF questionnaire appeared to be reliable and valid, although women had a tendency to give socially desirable answers. The results indicate that IVF women feel more anxious (State – Trait Anxiety Index) than a normal population, but do not express more emotional complaints (Hopkins Symptoms Checklist). Comparison of answers concerning the situation before and after IVF treatment revealed that treatment outcome has no influence on attitude towards IVF. After treatment, the women’s relationships were enhanced. A possible influence exerted by psycho-social factors on the chances of achieving pregnancy with IVF could not be confirmed. (Visser, Haan, Zalmstra and Wouters 1994)
Gender differences in psycho-social adjustment to infertility and its treatment were evaluated amongst a cross-sectional sample of 330 couples, of whom 113 were first time participants and 217 were repeat cycle couples. Whilst 30% of both husbands and wives experienced clinically elevated anxiety regardless of stage of treatment; repeat cycle women (25%) faced the further risk of developing clinically severe depressive symptoms. Significant differences in the amount of care and control received from their spouse and in the degree they suppressed their emotions were reported amongst repeat cycle couples. Any clinical implications of differences in male–female caring styles are discussed within the IVF context. The results suggest that interventions intended not only to reduce anxiety and depressive symptoms, but also to facilitate ongoing psycho-social functioning, should be implemented for couples at different stage of IVF / ET treatment (Beaurepaire et al 1994).

There is a large literature that demonstrates that infertility has a variety of negative effects on women’s and men’s well-being, but little is known about the impact of becoming a parent. The effects of parenthood were examined in a longitudinal study with both wives and husbands from 174 infertile couples and a comparison group of 74 presumed fertile couples. Infertile women who became parents experienced greater global well-being but diminished marital well-being, compared with infertile women who had not become parents. Infertile men who became parents experienced the same negative effects that their wives reported, but they did not experience positive effects to the same extent. Parental status had fewer positive and negative effects on members of presumed – fertile couples. These results are discussed in terms of gender differences in the meaning of parenthood, and their implications for research and clinical services are considered (Abbey, Andrews and Hallman 1994).

One hundred infertile women and 73 female controls completed three measures of psychological well-being (depression, self esteem and self confidence) on two occasions (Time 1 and 2), coinciding with the beginning and end of a failed IVF attempt by the infertile woman. At time 2, the IVF women were also asked to indicate whether
they had used a number of different coping responses, in relation to dealing with their failed IVF attempt. As predicted, IVF women were more depressed and had lower self-esteem than controls prior to the treatment cycle, and both before and after the treatment cycle they were less self-confident. After the failed IVF procedure, IVF women were more depressed and had lower levels of self esteem than they did prior to the treatment cycle. In terms of the effects of coping on the post attempt well-being of the IVF women, the use of problem focused coping was associated with high levels of Well-Being, while the use of avoidance coping and seeking social support was associated with low levels of well-being. (Hynes, Callan, Terry and Gallois 1992).

To compare the dynamics a fertility problem stress experienced by wives and husbands in infertile couples with the dynamics of stress from other sources experienced by members of couples presumed to be fertile was studied by Andrews, Abbey and Halman (1992). Relationships of stress to four marriage factors and four aspects of life quality (subjective well-being) are examined within a causal modeling framework using data from structured interviews. Face-to-face interviews were conducted in study participants’ homes. Wives and husbands from 157 couples with primary infertility and from 82 presumed-fertile couples were studied. Final outcome measures were four multi-item scales assessing life quality with regard to the marriage, own self-efficacy, own health and appearance, and life as a whole. Intervening outcome scales measured four marriage factors: marital conflict, sexual self-esteem, sexual dissatisfaction, and frequency of intercourse. Higher levels of stress, regardless of whether that stress was from attempting to solve a fertility problem or another problem, were related to reduced marital functioning and decreased life quality. For husbands, the strengths of the linkages did not depend on the source of the stress. For wives, however, the casual model suggested that fertility-problem stress had stronger negative impacts on sense of sexual identity and self-efficacy than did stress from other problems (P < 0.05). Stress from any source had more impact on the lives of wives than of husbands, more impact on satisfaction with self and general well-being than on satisfaction with the marriage or
health, and affected life quality mostly indirectly through its impacts on the marriage factors.

A longitudinal study was designed to assess the effects of infertility as well as the influence of the subsequent medical investigation on marital functioning. During their initial visit at a fertility clinic, 165 couples underwent psychological assessment. Questionnaires were completed to assess stress, sexual satisfaction, and marital adjustment. Participants were categorized into those who became pregnant during the 12 months of the study (n=48 couples) and those for whom treatment was not successful (n=117 couples). Significant increases in stress and decreases in marital functioning were experienced by subjects as the treatment investigation progressed. Furthermore, greater levels of marital distress were observed in couples that did not conceive. Significant gender differences were observed. (Benazon, Wright and Sabourin 1992)

To determine which psycho-social, treatment, and demographic factors relate to the amount of perceived stress that infertile women and men experience a study was conducted by Abbey, Halman and Andrews in 1992. A cross-sectional, structured interview research design was used. In–person interviews were conducted in study participants’ homes. Wives and husbands from 185 couples in Southeastern Michigan with primary infertility were studied. A nine-item rating scale of perceived stress associated with infertility was the outcome measure. For both women and men, stress was significantly positively correlated with treatment costs and number of tests and treatments received; stress was significantly negatively correlated with confidence that one will have a child and perceived control. For women only, attitudes about infertility treatments, importance of children, attributions of responsibility to physicians, and social support also significantly related to perceived stress. For men only, income, number of physicians’ seen, and self attributions of responsibility also significantly related to perceived stress. As hypothesized, a variety of treatment characteristics and psycho-social factors were related to experienced stress. Contrary to expectation, demographic factors such as age and number of years married were not related to experienced stress. This
study results suggest that attempts by health care providers to increase patients’ sense of control, optimism (within realistic limits), and social support should reduce stress.

There has been marked progress in the development of infertility interventions. The study by Halman et al (1992) reported attitudes about 11 interventions for infertility. Face – to – face interviews were conducted with each member of 185 infertile and 90 presumed fertile couples in Southeastern Michigan. Seven of these interventions were generally viewed favorably and four were generally viewed negatively, regardless of the couple’s fertility status. Infertile couples viewed all interventions, except for adoption, more favorably than did fertile couples. Multidimensional scaling was used to cluster the interventions according to similarity in endorsement. These clusters form a continuum from interventions that allow only one member of the couple to be a biological parent to the most noninvasive techniques. All clusters remain roughly equidistant from adoption, in which neither member of the couple is a biological parent. Interventions that produce a child who is biologically related to only one member of the couple were viewed most negatively. Members of couples who were receiving fertility treatment made finer discriminations among infertility interventions than did individuals who had not received treatment.

Stress associated with the inability to have a child is linked to four aspects of marriage and to five dimensions of life quality. Data came from 157 couples who met a standard medical definition for infertility. Wives and husbands were interviewed independently, and most of the following findings apply to both. A causal model suggests that fertility problem stress had direct effects that increased marital conflict and decrease sexual self-esteem, satisfaction with own sexual performance, and frequency of sexual intercourse. Also, fertility problem stress has both direct and indirect and effects (via the marriage factors) that decrease evaluations of life-as-a-whole, self-efficacy, marriage, intimacy, and health. The negative effects on life quality are stronger for wives than for husbands. The model suggests that the life quality of couples with fertility problems could be improved if health care providers and couples themselves took steps to reduce
such stresses and/or reduce their impact on the marriage factors. (Andrews, Abbey and Halman 1991)

The purpose of this study (Wright, Duchesne and Sabourin 1991) was to evaluate gender differences in psycho-social responses of 449 consecutive first – admission couples in a fertility clinic. Consistent with previous research, infertile women showed higher distress than their partners on a global measure of psychiatric symptoms and subscales of anxiety, depression, hostility, and cognitive disturbances, as well as on measures of stress and self – esteem. When compared with same – sexed population norms on the measure of psychiatric symptoms, both male and female infertile patients were significantly more distressed than average. No evidence was found for unusually high levels of marital or sexual distress at intake. Implications of results for clinical management are explored.

A study was conducted by Newton, Hearn and Yuzpe (1990) to assess the immediate psychological impact of failed In Vitro Fertilization (IVF). Emotional status and marital functioning were also examined pre – IVF, and both demographic information and psychological test scores were evaluated as predictors of reaction to treatment failure. After a failed first cycle, both males and females showed significant increases in anxiety and depressive symptoms. Although group means were not clinically elevated and most participants were coping adequately, the prevalence of both mild and moderate depression increased substantially, particularly among women. In addition, women without children were a subgroup particularly vulnerable to the stress of failure. Predisposition towards anxiety, pre – IVF depressive symptoms, and fertility history were the most important predictors of emotional response.

There is increasing evidence that a behavioral treatment approach might be efficacious in the treatment of the emotional aspects of infertility and may lead to increased conception rates. The first 54 women to complete a behavioral treatment program based on the elicitation of the relaxation response showed statistically
significant decreases in anxiety, depression, and fatigue as well as increases in vigor. In addition, 34% of these women became pregnant within 6 months of completing the program. These findings established a role for stress reduction in the long term treatment of infertility. They further suggest that behavioral treatment should be considered for couples with infertility before or in conjunction with reproductive technologies such as intra uterine insemination and gamete intra fallopian transfer. (Domar, Seibel and Benson 1990)

The understanding of psychiatric morbidity in the infertile population relies to a great extent upon the instruments used to measure psychopathology. Berg and Wilson (1990) investigated the distinction between psychiatric morbidity and infertility strain reactions in a sample of 104 infertile couples using the SCL – 90 – R. Some symptoms ordinarily indicative of psychopathology can represent normal side effects or reactions to infertility treatment, thus causing spurious estimates of pathology. Alternately, item analyses revealed a profile alienation frequently occurring among both male and female infertility patients. The concept of infertility strain is suggested as a vehicle for understanding the functioning of infertile patients and to circumvent the stigmatizing effects of psychiatric labels while providing appropriate intervention.

The psychological and the hormonal response to a specific emotional stressor (a video film on treatment of infertility, pregnancy, and delivery) were investigated in 30 women and the responses were correlated with their trait anxiety level. The experiment included a resting period before and after the stressor. The psychological response, i.e., the change in state anxiety, was in phase with the stressor and varied with the trait anxiety level. The endocrinological response, i.e., the time courses of prolactin, cortisol, and testosterone, was not in phase but varied with the trait anxiety level. It is suggested that psychological phenomena as anticipation, mental assimilation, and reflection could explain these findings and that these should be taken into account when investigating the so – called “psychological” infertility. (Demytetnaere et al 1989).
Women who undergo treatment for infertility frequently report depression, but it is crucial to distinguish between subjective distress, symptoms, and clinical depressive disorders. In the initial assessment of a prospective, longitudinal study, 59 women presenting for infertility treatment were compared with 35 women presenting for routine gynecological care. Infertility patients and controls were not significantly different on self-report measures of partner satisfaction, sexual functioning, or self-esteem. There was also no difference in psychiatric symptomatology, or in the percentage of subjects who were currently experiencing or had ever experienced a major depressive episode. However, the infertility patients perceived themselves to have been already quite affected by their inability to conceive. For instance, 49.2% reported changes in their sexual functioning and 74.6% reported changes in their mood. (Downey et al 1989).

In Vitro Fertilization (IVF) is one of the newest techniques for treatment of infertility. While the medical aspects of IVF have been extensively reported, little research has explored this procedure from the couple’s point of view. In this descriptive study, 20 couples who had experienced at least one IVF procedure were interviewed. The results indicate that while IVF offers hope for infertile couples, the procedure, if unsuccessful, can be emotionally traumatic. In addition, the results suggest that comprehensive anticipatory information and emotional support are the primary needs of couples undergoing IVF (Milne 1988).

The purpose of the investigation by Paulson et al (1988) was to examine the psychological test results of women diagnosed with infertility as compared with the general population of women. The infertile group consisted of 150 women, whereas the control group included 50 women. Both groups were similar in regard to age and number of years married. The tests administered were: the 16 Personality Factor, the IPAT Anxiety Scale, the IPAT Depression Scale, the Tennessee Self – Concept Scale, and the Internal – External Scale (locus of control). Scores on a total of 41 test variables did not differ significantly between the two groups. In fact, the means and standard deviations for all variables were remarkably similar. This study concludes that significant emotional
maladjustment is no more prevalent in women coping with infertility than for the general population of women. Results from this investigation cast doubt on the historical assumption that stress may be a causal factor in infertility.

Few experimentally rigorous studies have been conducted to determine the emotional impact of the infertility investigation on the infertile couple. In response to the deficit in rigorous experimental research, a longitudinal, exploratory study of 43 primary infertile couples was conducted. The study was conducted to determine if changes occurred in the marital relationships, sexual satisfaction, and levels of psychological distress of the couples, as they progressed through the medical investigation of their infertility. Changes were assessed based on sex, diagnostic information, and time spent trying to conceive. Results indicated that significant distress was experienced by couples during the initial medical interview and at the time of diagnosis. Relationship quality did not appear to deteriorate as a result of the medical investigation; however, questions were raised regarding the sexual relationships of couples receiving an unexplained infertility diagnosis. (Daniluk 1988).

One hundred and fifty–six women who enrolled for treatment in an In Vitro Fertilization (IVF-ET) program were interviewed, 15 months (mean interval) after the last program contact. Perceptions of treatment stress, decisions about further treatment and the extent of resolution of the infertility crisis were investigated. Standard self-report instruments were used to assess emotional status, self-esteem and marital adjustment. The results showed that only about half the couples who did not achieve pregnancy had decided to terminate treatment. Resolution of infertility was significantly correlated with coping with infertility and with the decision to abandon treatment. Although most patients described treatment as extremely stressful, this did not itself result in emotional distress or dysfunction following treatment, and psychiatric syndromes were infrequent. A deeper understanding of the interactions of these identified factors would help all couples who confront unwanted infertility. (Freeman et al 1987).
The purpose of the study by Link and Darling (1986) was to investigate the perceived life, marital, and sexual satisfaction of married couples undergoing treatment for infertility. A survey research design was utilized involving the responses of 43 husband–wife pairs. The findings indicated that wives had a significantly lower level of satisfaction with life than their husbands and that there were significant relationships between husband–wife pairs for both marital and sexual satisfaction. In comparison to paired wives, the responses of 17 wives whose husbands chose not to respond to the survey indicated higher levels of dissatisfaction in all three dimensions of life satisfaction. Furthermore, a majority of the scores for this group indicated clinical levels of depression. It was evident that individuals, especially females, undergoing treatment for infertility experienced stress in various areas of their lives. Hence, suggestions are given to assist caregivers in their endeavor to enhance the quality of life for infertile couples.

An Infertility Questionnaire was developed to measure the specific affects of infertility on three major areas; self esteem, blame / guilt, and sexuality. The Infertility Questionnaire, possibly in combination with a standard instrument to measure psychological distress, appears to offer a simple method of assessing the emotional impairment that accompanies infertility. (Bernstein, Potts, and Mattox 1985).

The role of psychological factors in IVF is complex. Psychological issues intertwine with physical ones, often with additive affects. The very diagnosis of infertility is likely to cause stress. In addition, the many investigations and procedures may have compounded distress. There are probably a small number of patients in whom psychological factors may induce infertility. But in the majority, psychological factors may exacerbate infertility and influence the patient’s and partner’s responses. Mental, sexual, marital and social adjustment may all be affected. The procedure of IVF is likely to have a further impact. A pilot study of couples entering an IVF program revealed the women to be highly anxious and to conform strongly to feminine stereotypes. Many had received psychiatric help in the past. The idiopathic group appeared to cope less well
with stress and had higher anxiety and neuroticism scores. Follow up revealed that IVF had a profound impact on many of the women. Most had received no counseling in the interim. In those who completed questionnaires at follow-up, a differential effect was observed between the organic and idiopathic groups. State anxiety fell in the idiopathic group but so did marital adjustment. The clinician is advised to incorporate consideration of the psychological aspects of IVF into every aspect of the program. The addition of a psycho-social team may assist the gynecologist in this and help the couple to make an optimal adjustment. (Dennerstein and Morse 1985).

Twenty four infertile couples were interviewed prior to and 2 years after the woman’s reconstructive tubal operation. Their marital relationship, social and sexual life, mental health, possible solutions to the infertility problem and need of professional psycho-social counseling were studied. Moreover, various mental symptoms were recorded by means of a ‘symptom checklist’. The personality characteristics were evaluated by the Eysenck Personality Inventory (EPI). The partners’ feelings for each other were worsening 2 years after the operation. There was also a tendency to deterioration in the participants’ opinion about their marital relationship, but no statistically significant change could be found. The women reported deterioration of sexual life and the men experienced an increased negative influence of the infertility problem on the marital relationship. The negative emotional and social effects of infertility were pronounced both before and 2 years after the surgical treatment. The participants’ personality characteristics are regards neuroticism and extroversion had not changed. Most of the infertile couples found it difficult to work on their own towards a solution to the crisis of infertility during the 2 years following the surgical treatment. (Lalos et al 1985).

2.4. Attitude Towards Treatment Options and Treatment Seeking Behaviour

A study by Dhont et al (2010) examines perceptions of infertility causes, treatment-seeking behaviour and factors associated with seeking medical care in an urban infertile population in Rwanda, as well as the response of health providers. Between
November 2007 and May 2009 a hospital based survey was conducted among 312 women and 254 male partners in an infertile relationship. Infertility causes based on a medical diagnosis were mentioned by 24% of women and 17% of men. Male infertility awareness was low in both sexes with 28% of men and 10% of women reporting male-related causes. Seventy-four per cent of women and 22% of men had sought care for their infertility in the past. Seeking treatment in the formal medical sector was associated with higher income, being married and infertility duration of more than 5 years in both sexes. In women, higher education and being nulliparous and in men blaming oneself for the infertility was also associated with seeking formal medical care. Participants reported a wide array of treatments they received in the past, often including ineffective or even harmful interventions. Health authorities should invest in improving information, education and counselling on issues pertaining to causes and treatments of infertility, and in drawing up guidelines for the management of infertility at all levels of health care.

Oocytes donation is a popular treatment option among women with ovarian dysfunction. Little is known about the amount of information recipients have about their donors and if the amount of information the couple has relates to their plans to disclose. The purpose of this study by Klock and Greenfeld (2004) was to assess the amount of information recipients had about their donors and their disclosure plans. Sixty–two sets of oocyte donation parents from five programmes completed a self report questionnaire. Ninety per cent of both men and women knew their donor’s age, ethnicity, hair colour, eye colour, height, weight, education and medical history. Significantly more women than men told others about using a donor to conceive, but two – thirds of women and men would not tell others if they had to do it over again. Fifty – nine per cent of women and 52% of men planned to or had told their child; 34% of women and 41% of men do not plan to tell. The amount of information known about the donor was related to plans to tell the child for men only. Approximately half of couples plan to tell their child of their oocytes donor origin and majority have told others but many regret having done so. Knowledge about the donor is related to disclosure for men only.
To investigate reasons for discontinuation of IVF treatment among infertile women, a prospective cohort study was conducted at Centre for Reproductive Medicine at a large university hospital. The 450 couples of a cohort of 974 couples who started IVF treatment between January 1996 and December 1997 and did not achieve childbirth participated in the study. The reasons for ceasing treatment were evaluated by scrutinizing the medical records for all couples (n=288) who did not achieve live birth and who did not complete three stimulated IVF cycles. A questionnaire was sent to all patients for whom the reason for discontinuation was not obvious from the medical records (n = 211) of 450 couples not achieving live birth, 208 completed their subsidized cycles, whereas 24, discontinued IVF. In 192 (79%) of the 242 cases, the reasons for ceasing treatment could be identified from records or questionnaires. The reason for discontinuation was psychological burden in 26%, poor prognoses in 25%, spontaneous pregnancy in 19%, physical burden in 6%, serious disease in 2%, and other reasons in 7%. An unexpectedly high per cent of couples who performed IVF discontinued the treatment before the three cycles that were offered to a majority of the couples. A majority of these discontinuations were due to psychological stress. This information is of importance when counseling patients during treatment. (Olivius et al 2004).

In a study by Fassino et al (2003) a total of 42 couples with a 1-year-old child born through surrogacy were assessed using a standardized semi-structured interview. Data were obtained on motivations for surrogacy, details about the surrogate mother, experience of surrogacy during pregnancy and after birth and disclosure of the surrogacy to friends and family. Couples retrospectively recalled their levels of anxiety throughout the pregnancy as low, and relationships between the couple and the surrogate mother were found to be generally good. This was the case regardless of whether or not the couple had known the surrogate mother prior to the arrangement. After the birth of the child, positive relations continued with the large majority of couples maintaining some level of contact with the surrogate mother. All couples had told family and friends about the surrogacy and were planning to tell the child. Commissioning couples generally perceived the surrogacy arrangement as a positive experience.
This study by Jadva et al (2003) examined the motivations and psychological consequences of surrogacy for surrogate mothers. Thirty-four women who had given birth to a surrogate child approximately 1 year previously were interviewed by trained researchers, and the data rated using standardized coding. Information was obtained on (i) reason’s for the women’s decision to become surrogate mother; (ii) retrospective view of the relationship with the commissioning couple before the pregnancy, during the pregnancy and after the birth; (iii) her experience during and after relinquishing the child; (iv) how others reacted to her decision to become a surrogate mother. It was found that surrogate mothers do not generally experience major problems in their relationship with the commissioning couple, in handing over the baby, or form the reactions of those around them. The emotional problems experienced by some surrogate mothers in the weeks following the birth appeared to lessen over time. It was concluded saying that surrogate mothers do not appear to experience psychological problems as a result of the surrogacy arrangement.

Although gamete receipt or donation has become an integral part of infertility management, previous research in the field of social attitudes and intention to use medical technologies is limited. The aim of this paper by Chliaoutakis (2002) was to investigate people’s intentions to receive or donate sperm, oocyte or uterus (surrogacy) and to identify possible motivational patterns explaining this intention. Personal interviews were conducted with 365 men and women of reproductive age (18-45 years). Stratified random sampling was performed to select the men and women for interview. The content of the instrument used was derived from in-depth qualitative interviews with physicians experienced in assisted reproductive technologies, as well as from people who had recourse to gamete donation and surrogacy. The results obtained highlighted the following major aspects: (i) approximately 50% of the survey’s participants would be prepared to receive/donate sperm and oocyte; (ii) the results from multiple regression analysis suggest that the ‘traditional gender roles’ pattern is positively associated with intention to use gamete donation and surrogacy. On the contrary, confidence in emotional relationship was negatively associated with ‘intention to use gamete donation and surrogacy’. (iii) Men were more likely than women to report ‘intention to use gamete
donation and surrogacy’. These data suggest that specific motivational patterns of the population need to be thoroughly analysed and taken into consideration in order that appropriate counseling be addressed to individuals and couples.

This study by Chiliaoutakis, KouKouli and Papadakaki (2002) aimed to investigate attitudinal indicators and their potential relationship with the public’s intention to have recourse to gamete donation and surrogacy. A total of 365 individuals of reproductive age (49.3% men and 50.7% women) completed a questionnaire referring to their intention to receive or donate sperm/oocytes and their acceptance of becoming a commissioning couple or surrogate mother, and also to explore their attitudes towards gamete donation and surrogacy. Two attitudinal indicators emerged from the principal component analysis identifying (i) recipients’ and donors’ choice for anonymity, donors’ renunciation of parental obligations and refusal of children’s rights to know their biological parents and (ii) favorable attitudes towards legislative and financial measures to be adopted by the government for the promotion of reproductive technologies. It was found that the indicator of ‘Donors Anonymity and Refusal of Children’s Right’ (DARCR) and the ‘Legislative and Financial Support’ (LFS) scale were positively associated with intention to have recourse to Gamete Donation and Surrogacy (GDS). Moreover, among the other variables used recourse to GDS (P =0.029), suggesting that the more religious respondents are less willing to use GDS. Social, legislative and financial implications provide a convenient rationale for adopting a favorable intention towards reproductive technologies. The findings of the present research should be given close consideration by policy makers and health education campaigns.

Infertility is a major reproductive health problem in Africa. A paper by Dyer. Abrahams, Hoffman and Spuy (2002) presents the findings of new studies which focus on the knowledge that infertile woman have about fertility and the causes of infertility, their treatment-seeking behaviour and their expectations of an infertility clinic. A total of 150 infertile women from a culturally diverse, urban community in South Africa participated in the two studies. Both qualitative and quantitative research methods were applied using in-depth, semi-structured interviews and structured questionnaires. Results
showed that the women who participated had little knowledge about human reproduction and modern treatment options for infertility. They were highly motivated to find treatment and accessed both traditional and modern health care. Treatment barriers within the modern health care were identified. The importance of health education and counseling is recognized and both need to be integrated into infertility management, particularly in the developing world. The introduction of clinical guidelines is recommended in order to overcome treatment barriers and improve the delivery of health services.

**Summary**

This chapter had dealt with the review of research literature related to the problem stated. It had helped the researcher to understand the impact of the problem under study. It has also enabled the investigator to design the study, develop the tool, and plan for data collection procedure and to analyse the data.