

REVIEW PAPER

Psychological Distress Among Infertile Women: Exploring Biopsychosocial Response To Infertility

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Abstract

Previous studies have shown that the experience of infertility is linked with psychological responses such as depression, anxiety, guilt, social isolation, and decreased self-esteem in both men and women. The prevalence of depression among infertile women ranges from 8% to 54%. Treating gynecologists and healthcare professionals seldom recognized the psychosocial distress in women undergoing fertility treatment. Therefore this paper reviewed the bio-psychosocial response towards infertility among women with infertility.

Keywords: Infertility, depression, women, related stress

Introduction

The International Conference on Population and Development, ICPD (1994)¹ has declared the reproductive and sexual health as the fundamental rights to individuals, couples and families all over the world. They called for infertility as one of the basic issues of reproductive health care in their 'Program of action' which should be reached for all by the year of 2015.

The WHO estimates that 8–12% of couples around the world experience difficulty conceiving a child². Approximately one in five (20%) couples will experience infertility – or the inability of a couple to conceive or carry to live birth a pregnancy after one year of regular sexual relations without the use of contraceptives.

Approximately 75% of couples diagnosed with infertility will seek some type of treatment³. Of those who seek medical treatment, it is estimated that 50% to 60% will eventually conceive; compared to only 5% who would conceive if they did not seek medical interventions⁴.

Prevalence rates show that 40% of infertility is primarily attributable to female factors (e.g., tubal factors, endometriosis), 40% is attributable to male factors (e.g., low sperm count, impotence), and the remaining 20% is attributable to an interaction between the two partners. Studies examining the psychological consequences of infertility have shown that infertility leads to emotional distress such as depression, anxiety, guilt, social isolation, and decreased self-esteem in both men and women⁵.

Infertility is universally described as a stressful experience for patients, affecting all aspects of their lives: marital, social, physical, emotional, financial, and spiritual. In a comparison to patients with other medical conditions, psychological symptoms associated with infertility are similar to those related to cancer, hypertension, and cardiac rehabilitation⁶. Infertile women, in comparison with control group, showed higher scores on the depression and anxiety scales⁷. Commitment to intense treatment which is time consuming may lead to a disruption in family, work, and social activities, as well as the protracted nature of treatment, which may go on for years. Infertility stress impacts the marital relationship by depleting sexual intimacy⁸.

Over the past two decades, researchers have developed a greater understanding of the relationship between infertility and psychological distress. During this time, over 100 quantitative studies and 26 qualitative studies have been published on this topic⁵. Findings from these studies consistently indicate that infertility is associated with increased psychological distress for both men and women⁹. Majority of studies examining the coping strategies of infertile men and women rely on general measures of psychological distress (e.g., depression, anxiety) and marital adjustment as outcome variables. Very few studies use infertility-specific measures that capture the complexity of stress directly related to the infertility experience¹⁰.

Prevalence of Depression among Women with Infertility

Almost 21% of the female population experience major depression in their life¹¹. Female depression has higher risk on first onset, can last longer, and often recur¹². Data from the National Comorbidity Survey,

a population-based epidemiological study, show that the prevalence of a major depressive disorder (MDD) is 21.3% in women and 12.7% in men. This sex gap begins in adolescence and continues to midlife, approximating the span of the childbearing years in women¹³.

In a study done by Chen *et al.* found that 26.8% of the women undergoing Artificial Reproductive Technology (ART) met criteria for a mood disorder, 17% for major depression and 9.8% for dysthymia¹⁴.

Many authors have reported that depression is a common consequence of infertility¹⁵. Few articles exist examine the relationship between depression and infertility. Some studies showed that there is no relation between duration of infertility and depression or psychological factors¹⁶. Another study showed those who had 2–3 years infertility had more depression / anxiety than those who had this problem for a year or more than 6 years. Peak of depression could be seen during third year of infertility. After six years there will be a reduction in psychological symptoms in women. Those who have social support, positive personal characteristics, and have a satisfactory life with their spouse show no signs of anxiety/depression¹⁷.

In a local study, Sherina *et al* (2008) found a significant association between depressive symptoms and history of having a miscarriage within the last 6 months ($p = 0.001$) and difficulty of getting pregnant ($p = 0.43$). The odds of having depressive symptoms was 5 times higher for women who had suffered a miscarriage within the last 6 months compared to women who didn't and was found to be a potential risk factor for depressive symptoms. Depressive symptoms were significantly associated with education level ($p = 0.036$). The odd of

having depressive symptoms was two times higher for women with no formal education compared to those with formal education¹⁸.

However, the vast majority of individuals coping with fertility problems do not exceed clinical thresholds for depression and some couples agreed that infertility strengthened their relationship and brought them closer together¹⁹. Consistent with bio-psychosocial models of infertility, the reactions to fertility problems may be best characterized by the interplay between interpersonal relationships, physiological parameters, risk and protective factors, cultural expectations, and individual coping resources²⁰. Since depressive symptoms are common in infertile women, psychological interventions aimed at reducing depressive symptoms need to be implemented, especially for women with a definitive diagnosis and for those with durations of 2 to 3 years of infertility²¹.

Reproductive Mood Disorders in Women

Women are at their greatest lifetime risk for mood disorders during their childbearing years²². Mood, or affective, disorders include unipolar depression and bipolar disorder, premenstrual syndrome and premenstrual dysphoric disorder (PMDD), depression during pregnancy, postpartum depression, menopause and depression²³. Women are more prone than men to depression, and this increased vulnerability has been ascribed to events arising from changes in the endocrine control of the reproductive system. These changes occur during the menstrual cycle (PMDD), after parturition (postpartum depression), and during the menopause (perimenopausal and menopausal syndrome). Attention has been given to women who develop these disorders are susceptible to changes in hormonal balance, which in turn are

believed to affect the activity of certain neuronal systems (particularly the serotonin-specific ones). This interpretation is favored by evidence indicating the existence of the effect of the sex hormones on serotonin-specific neurotransmitter function, and on mood²⁴. Biological responses to stress are known to suppress reproductive function across the human life course. For example, the frequency of intense exercise in adolescent athletes has been correlated with delayed menarche as well as postpartum depression²⁵.

Stress causes an increased secretion of hypothalamic corticotropin-releasing factor, increased pituitary adrenocorticotropic hormone release, and augmented secretion of adrenal cortex hormones, including cortisol. Therefore, it can be assumed that stress has a direct effect on cortisol level production and therefore, a negative effect on fertility. Thus, it is apparent that psychological functioning interacts with endocrinological levels, which significantly influence fertility²⁶. From a physiological perspective, there is research of the effects of stressful stimuli on hormonal secretions. The distress experienced as a result of infertility has been found to be involved with physiological reactions that actually interfere with successful treatments for infertility e.g. during *in-vitro* fertilization (IVF) in which high anticipatory cortisol levels negatively influenced the outcome of IVF. Conception is difficult in these patients because the invasive procedure of IVF does not overcome cortisol barriers²⁶.

High circulating stress hormones can interfere with the timing of ovulation and shorten the luteal phase. Diminished progesterone availability in the luteal phase post-conception lessens the likelihood of a successful implantation; a 12-day luteal phase and ≥ 8 mm endometrial thickness

have been put forward as minimums for fertility. Accordingly, the circulation of elevated levels of stress hormones during the period between pre-conception and early pregnancy may prevent implantation and early pregnancy maintenance by luteal phase defect mechanisms²⁷. Depressive symptoms usually occur with the onset of menses. Fertility problems may also negatively affect a woman's self-esteem by inducing a sense of failure²⁸. Although male factor subfertility is a contributing element in almost 40% of the infertility cases, studies also suggest that infertility is a more stressful experience for women than men with lower score on self-esteem, were more depressed, were more likely to blame themselves for their infertility, and reported lower life satisfaction regardless of which partner was diagnosed with the reproductive impairment⁵. Distress from the infertility experience and treatments will further contribute to the couple's difficulties with conception²⁶.

Infertility Related Stressors

Women have been found to exhibit more symptoms of distress and experience more infertility treatments, it seemed important to explore what moderates distress levels as it pertains to the experience of infertility. There is a need to evaluate the relationship of infertility related stressors and depression in infertile women. While previous literatures focused on the overwhelming amount of research studies on infertile women, in actuality, there have been very few methodologically sound studies examining infertility related stressors in these women and its association with depression.

Couples commonly report encountering a number of stressors associated with the medical diagnosis of infertility. These

stressors can include, but are not limited to, stress related to their sexual functioning, stress related to the endurance and quality of their relationship, and stress related to changes in their social and family networks¹⁰. Griel and colleagues (1988) found that infertile women view infertility as a central focus for identity²⁹. Others associate infertility with feelings of loss of control and attempts to regain control³⁰, feelings of defectiveness and reduced competence³¹, stress on marital and sexual relations at the same time that there exists a counter-tendency for infertility to "pull couples together"³², a sense of social stigma³³, and stressful nature of the treatment process itself³⁴. Infertility may threaten self-esteem due to its potentially stigmatizing nature. If infertility is experienced as stigmatizing this may isolate people from potential sources of support³⁵.

Whitford and Gonzalez (1995) found that couples without children receive comments that they perceive as unsupportive and result in more fear around disclosure, feelings of isolation and withdrawal from social situations, which could then impact on emotional status³⁵.

Socio-Cultural Influence on Infertility

Infertility places a barrier between the couples and their ability to fit into the gender roles prescribed by their culture. Women who are infertile have no ability to meet the cultural expectation of motherhood, and men who are infertile have no ability to demonstrate the culturally taught aspects of their manhood. Not only has the couple lost their expectation and hope of having a biological child, but they have also lost a part of their socialized identity. Their identity, which they have formed over the course of their lives, is now in question³⁶. In response to the direct attack on one's

identity, men and women frequently experience a change in their interpersonal relationships and social interactions. The socio-demographic factors of age, gender, marital status, education, and income have consistently been identified as important factors in explaining the variability in the prevalence of depression. The influence of culture plays an enormous role in individual responses to infertility³⁷.

Infertility places a barrier between the couples and their ability to fit into gender roles prescribed by their culture. Parents, family tradition, social norms, and religion all play an important role in the transmission of values and gender roles to them³⁸.

The way in which people deal with infertility is at least partly affected by the values and socio-cultural norms of the community in which they live. To Vietnamese people, family is the most important unit and for women childbearing is associated with stabilizing their marriage and closer bonds with his family. Socio-cultural context is an important consideration in the meaning of and responses to infertility.³⁹ In Nigeria, the major cause of infertility is sexually transmitted disease. Women are often blamed for infertility, and men may divorce their wives or engage in polygamy or both in an effort to have children. Adoption in this culture is generally not socially acceptable, and there are medical, ethical, and legal implications to infertility treatment⁴⁰.

The importance of fertility among Muslim women is exemplified by the social pressure on newly married women to become pregnant as soon as possible, especially to have sons. Infertile women may be stigmatized, divorced, or forced to agree to polygamy⁴¹. In some traditional settings and cultures, women have been shown to carry a

greater burden of infertility and are often blamed for infertility⁴² and where there have been social pressures and expectations for women to procreate⁴³.

In some cases, childless women have been excluded from some important social activities and ceremonies⁴⁴. Sandelowski and Jones (1986) included situations where participants were: (a) “forced to tell” about their fertility problem in order to explain their childless state, (b) obliged to hide negative feelings in order to sustain a relationship (e.g., attend a baby shower for a friend or ignore insensitive comments), and (c) constrained in or excluded from interactions with others because of the fertility problem⁴⁵.

The Effect of Infertility on Sexual Satisfaction

Sexual dysfunction may have an etiological role in infertility or it may be a consequence of the disorder secondary to psychological stress in either or both partners, sexual and relationship abnormalities we detected are secondary to infertility⁴⁶. Sexual infertility stress has been defined as loss of enjoyment of sexual relations, feelings of pressure to schedule sexual relations, and loss of sexual self-esteem¹⁰.

Infertility may interact with a couple's or individual's sexuality and sexual expression in two main ways. Sexual problems may be caused or exacerbated by the diagnosis, investigation, and management of infertility (or subfertility) or they may be a contributory factor in childlessness⁴⁷. Any examination of a couple's difficulty in conceiving must include clear questioning about their sexuality. Although a recent study demonstrated that overall levels of stress are related to treatment success, it also found that certain forms of infertility-related

stress (e.g., stress on the sexual relationship) were more strongly linked to treatment outcome than others⁴⁸.

Sexual infertility stress can interfere with early medical interventions (e.g., medication coupled with timed intercourse) and with infertility evaluations associated with the use of more advanced technologies⁴⁹. Some studies demonstrate that depression, stress, low self-esteem and sexual dissatisfaction may be psychological outcomes of infertility. There was a negative correlation between sexual satisfaction and depression⁵⁰. Infertility is associated with decreased sexual activity and the decrease appears to increase as the number of childless years grows⁵¹.

Losses Experienced by Infertile Couples

Multiple losses experienced by infertile couples include loss of sexual identity; loss of the childbearing and child-rearing experience and the elusive child they never were able to conceive; loss of the parental identity; loss of close relationships with a spouse, extended family members, and friends; loss of status or prestige; loss of a sense of control over one's life, loss of trust in one's body; loss of genetic legacy; loss of a grand-parenting relationship; loss of a sense of spirituality and hope for the future; and loss of feelings of self-worth⁵². Couples may experience the loss of feeling connected to society as it appears that so many other couples produce children easily. Women may also question their femininity and sexual attractiveness and men may feel impotent or like a failure. In addition to the direct attack on one's identity, couples frequently experience a change in their interpersonal relationships and social interactions³⁸.

The Effect of Infertility on the Couple's Relationship

Greil (1997) found that differences in the way couples commonly view infertility can lead to tension and anger in marital relationships⁵. Previous qualitative studies among couples in fertility treatment have shown that infertility and treatment at the same time can be seen as a threat or a challenge for the couple and as a situation that can bring the partners closer together and strengthen the marriage²⁹. For half or most of the couples involved in these qualitative studies the infertility experience had strengthened their marriage and had improved the partners' mutual connection⁵¹.

Shortcomings of Previous Studies

According to Griel, 1997, one important shortcoming of previous literature is an overemphasis on women, small sample size with methodological flaws. Heavy reliance on self-reports can cause social desirability bias especially in clinic samples because couples may feel pressure to appear "normal" in order to make sure health care professionals will treat their infertility as a medical, rather than a psychological, problem⁵.

However the biggest problem with regard to sampling is that people who do not seek treatment have been left unstudied. Without studying non-treatment seekers, it is extremely difficult to sort the effects of infertility from the effects of infertility treatment. And since non-treatment seekers have different demographic profiles than treatment seekers, it is impossible to generalize from studies of treatment seekers⁵³.

Another methodological problem in the study of the psychological consequences of

infertility has to do with timing⁵⁴. Infertility is not a stable trait but a *process* with an uncertain trajectory. Studies of the experience of infertility must take the temporal factor into account. It is crucial to know where individuals being studied stand in the infertility process. There exists some evidence that the effects of infertility vary over time.

The Hynes *et al.* (1992) study demonstrates both how important to examine the psychological consequences of infertility, there are actually two temporal variables i.e. duration of infertility and duration of treatment. The two may well be related to psychological stress in very different ways and may even interact. For example, it is not at all farfetched to entertain the possibility that infertility stress will diminish over time for those who are no longer seeking treatment but not for those who are still actively pursuing treatment⁵⁵.

Most studies have been cross-sectional rather than longitudinal in design which makes it difficult to sort out cause and effect⁵⁶.

Several authors have discussed clinical approaches to working with infertile couples. Shapiro (1982) advocated that therapists help couples move through the stages of the grieving process⁵⁷. McDaniel, Hepworth and Doherty (1992) use a bio-psychosocial model in their treatment approach that emphasizes the use of outside support systems⁵⁸.

Conclusion

Findings from the previous studies enhance our understanding of how depression among women with infertility is related to infertility stress and what are the factors in the infertility that can be associated with either symptoms of depression or diagnosis of

Major Depressive Episode which warrants further bio-psychosocial intervention. The reason why some women with infertility didn't develop depression can be explained either by the complex interaction of Hypothalamic-Pituitary-Ovary axis, sex hormone and serotonin specific neurotransmitter functions as well as the psycho-social interaction such as education level, occupation; and also based on patient's social support, coping skills and mutual understanding between both husband and wife. The quality of life of women with fertility problems could be further improved if appropriate psychological interventions form an integral part of the care plan in the management of female infertility. "Reproductive failure in humans is not often a single entity event but the result of complex interdependencies of demographic, physiological and psychological risk factors" (Nakamura *et al.*, 2008)⁵⁹.

References

1. International Conference on Population and Development (ICPD) – Programme of Action 1995. Adopted at the International Conference on Population and Development, Cairo, 5-13 September 1994, United Nations, UNFPA.
2. World Health Organisation Infertility. A tabulation of available data on prevalence of primary and secondary infertility. 1991; Geneva, WHO Programme on Maternal and Child Health.
3. Sadler AG, Syrop CH. The stress of infertility: Recommendations for assessment and intervention. *Family Stress*. 1998; 1-17
4. Andrews FM, Abbey A., Halman J. Stress from infertility, marriage factors, and subjective well-being of wives and

husbands. *Journal of Health and Social Behavior*. 1991; 32: 238-253

5. Greil AL. Infertility and psychological distress: A critical review of the literature. *Social Science and Medicine*. 1997;45: 1679-1704

6. Stanton AL, Burns LH. Behavioral medicine approaches to infertility counseling. In *Infertility counseling: a comprehensive handbook for clinicians* (Burns LH, Covington SN, eds.) 1999; p. 129-47. New York: Parthenon Publishing.

7. Domar AD, Zuttermeister PC, Friedman R. The psychological impact of infertility: a comparison with patients with other medical conditions. *J Psychosom Obstet Gynaecol*. 1993; 45-52

8. Beutel M, Kupfer J, Kirchmeyer P, Kehde S, Köhn FM, Schroeder-Printzen I, Gips H, Herrero HJ, Weidner W. Treatment-related stresses and depression in couples undergoing assisted reproductive treatment by IVF or ICSI. *Andrologia*. 1999; 31: 27-35

9. Daniluk J.C. Infertility: Intrapersonal and interpersonal impact. *Fertility and Sterility*. 1988; 49: 982-990

10. Newton CR, Sherrard MA, Glavac I. The fertility problem inventory: Measuring perceived infertility-related stress. *Fertility and Sterility*. 1999; 72: 54-62

11. Yonkers KA, Chantilis SJ. Recognition of depression in obstetrics/gynecology practices. *Am J Obstet Gynecol*. 1995; 173: 632-8

12. Kessler RC. Epidemiology of women and depression. *J Affect Disord*. 2003; 74: 5-13

13. Kessler RC, McGonagle KA, Swartz M, et al. Sex and depression in the National Comorbidity Survey. 1: lifetime prevalence, chronicity and recurrence. *J Affect Disord*. 1993; 29: 85- 96

14. Chen TH, Chang SP, Tsai CF, Juang KD. Prevalence of depressive and anxiety disorders in an assisted reproductive technology clinic. *Hum Reprod*. 2004; 19: 2313-18

15. Domar AD, Siebel MM, Benson H. The mind/body program for infertility: A new behavioral treatment approach for women with infertility. *Fertil Steril*. 1990; 53: 246-249

16. Hunt J, Monach JH. Beyond the bereavement model the significance of depression for infertility counseling. *J Hum Reprod*. 1997; 21: 11

17. Domar AD, Broome A, Zuttermeister PC, Seibel M, Friedman R. The prevalence and predictability of depression in infertile women. *Fertil Steril*. 1992; 58:1158-63

18. Sherina MS, Rampal L, Azhar MZ. The prevalence of Depressive Symptoms and Potential Risk Factors That May Cause Depression Among Adult Women in Selangor. *Malaysian Journal of Psychiatry*. 2008; (Original paper)

19. Schmidt L, Holstein BE, Christensen U, Boivin J. Does infertility cause marital benefit? An epidemiological study of 2250 women and men in fertility treatment. *Patient Education and Counseling*. 2005; 59: 244–251

20. Sexton MB, Byrd MR, von Kluge S. Measuring resilience in women experiencing infertility using the CD-RISC:

Examining infertility-related stress, general distress, and coping styles. *Journal of Psychiatric Research*. 2009; 10: 1016-7

21. Wright J, Allard M, Lecours A, Sabourin S. Psychological distress and infertility: A review of controlled research. *International Journal of Infertility*. 1989; 34: 126-142

22. Weissman MM, Olfson M. Depression in women: Implication for health care research. *Science*. 1995; 269: 799-801

23. American Psychiatric Association. *Diagnostic and Statistical Manual, 4th edition*. 2000; Washington DC. Text Revision.

24. Noble RE. Depression in women. *Metabolism Clinical and Experimental*. 2005; 54: 49-52

25. Frisch RE, Mc Arthur JW. Menstrual cycles: fatness as a determinant as a minimum weight for height necessary for their maintenance or onset. *Science*. 1974; 185: 949-51

26. Chung TKH, Lau TK, Yip ASK, Chiu HFK, Lee DTS. Antepartum depressive symptomatology is associated with adverse obstetric and neonatal outcomes. *Psychosom Med*. 2001; 63: 830-4

27. Facchinetti F, Matteo ML, Artini GP, Volpe A, Genazzani AR. An increased vulnerability to stress is associated with a poor outcome of in vitro fertilization-embryo transfer treatment. *Fertil Steril*. 1997; 68:384-385

28. Burton GJ, Jauniaux E, Charnock-Jones DS. Human early placental development: potential roles of the

endometrial glands. *Placenta*. 2007; 28: 64-69

29. Greil AL, Leitko TA, Porter KL. Infertility: his and hers. *Gender Soc*. 1988 ; 2:172-99

30. Woollett A. Childlessness: strategies for coping with infertility. *International Journal of Behavioral Development*. 1985; 8: 473-482

31. Valentine D. Psychological impact of infertility: identifying issues and needs. *Social Work in Health Care*. 1986; 11: 61-69

32. Freeman EW, Rickels K, Tansig R, Boxer A, Mastrianni L, Tureck R. Emotional and Psychosocial factors in follow-up of women after IVF-ET treatment. A pilot investigation. *Acta Obstet Gynecol Scand*. 1987; 66: 517-521

33. Sandelowski M, Jones LC. Social exchanges of infertile women. *Issues in Mental Health Nursing*. 1986; 8: 173-189

34. Blenner JL. Stress and mediators: patients' perceptions of infertility treatment. *Nursing Research*. 1992; 41: 92-97

35. Whiteford LM, Gonzalez L. Stigma: the hidden burden of infertility. *Soc Sci Med*. 1995; 40: 27-36

36. Akhtar-Danesh N, Landeen J. Relation between depression and socio-demographic factors. *International Journal of Mental Health Systems*. 2007; 1:4

37. Daniluk JC.. Gender and Infertility. In SR. Leiblum's *Infertility: psychological issues and counseling*

strategies.(SR. Leiblum, ed.). 1997; p. 103-129. New York: John W.

38. Wiersema NJ, Drukker AJ, Tien Dung MB, Huynh Nhu G, Thanh Nh N, Lambalk CB. Consequences of infertility in developing countries: results of a questionnaire and interview survey in the South of Vietnam. *Journal of Translational Medicine*. 2006; 4:54

39. Upkong D, Orji E. Mental Health of Infertile Women in Nigeria. *Turkish Journal of Psychiatry*. 2006; 17.

40. Ashkani H, Akbari A, Heydari ST. Epidemiology of depression among infertile and fertile couples in Shiraz, Southern Iran. *Indian Journal of Medical Sciences*. 2006; 60: 399-406

41. Papreen N, Sharma A, Sabin K, Begum L, Ahsan SK, Baqui AH. Living with infertility: Experiences among urban slum populations in Bangladesh. *Reproductive Health Matters*. 2000; 8(15): 33-44

42. Benyamini Y, Gozlan M, Kokia E. Variability in the difficulties experienced by women undergoing infertility treatments. *Fertility and Sterility*. 2005; 83(2): 275-283

43. Orji EO, Kuti O, Fasubaa OB. Impact of infertility on marital life in Nigeria. *Int J Gynecol Obs*. 2002; 79: 61-62

44. Remennick L.. Childless in the land of imperative motherhood: Stigma and coping among infertile Israeli women. *Sex Roles*. 2000; 43: 821-841

45. Shindel AW, Nelson CJ, Naughton CK, Ohebshalom M, Mulhall JP. Sexual Function and Quality of Life in the

Male Partner of Infertile Couples: Prevalence and Correlates of Dysfunction. *The Journal of Urology*. 2008; 179: 1056-1059

46. Read J. Sexual problems associated with infertility, pregnancy, and ageing. *British Medical Journal*. 2004; 329: 559-61

47. Boivin J, Schmidt L. Infertility-related stress in men and women predicts treatment outcome 1 year later. *Fertil Steril*. 2005; 83:1745-52

48. Saleh RA, Ranga GM, Raina R, Nelson DR, Agarwal A. Sexual dysfunction in men undergoing infertility evaluation: a cohort observational study. *Fertil Steril*. 2003; 79: 909-12

49. Nasim B, Niloofar S, Fatemeh RK, Morteza G. Comparing depression and sexual satisfaction in fertile and infertile couples. *Journal of Reproduction and Infertility*. 2007; 8: 1-30

50. Nene UA, Coyaji K and Apte H. Infertility: a label of choice in the case of sexually dysfunctional couples. *Patient Educ Couns*. 2005; 59: 234

51. Daniluk JC. Reconstructing their lives: a longitudinal, qualitative analyses of the transition to biological childlessness for infertile couples. *J Couns Develop*. 2001; 79: 439-49

52. Hart VA. Infertility and the role of psychotherapy. *Issues Ment Health Nurs*. 2002; 23(1): 31-41

53. Berg BJ, Wilson JF. Psychiatric morbidity in the infertility population: a reconceptualization. *Fertility and Sterility*. 1990; 53: 654-661

54. Berg BJ, Wilson JF, Weingartner PJ. Psychological sequelae of infertility treatment: the role of gender and sex role identification. *Social Science & Medicine*. 1991; 33: 1071-1080

55. Hynes GJ, Callan VJ, Terry DJ, Gallois C. The psychological well-being of infertile women after a failed IVF attempt: the effects of coping. *British Journal of Medical Psychology*. 1992; 65: 269- 278.

56. Connolly KJ, Edelman RJ, Barlett. An evaluation of counseling for couples undergoing treatment for in-vitro fertilization. *Human Reproduction*. 1993; 8: 1332-38

57. Shapiro C. The impact of infertility on the marital relationship. *Social casework*. *J Contemp Soc Work*. 1982; 7: 387-93

58. McDaniel SH, Hepworth J, Doherty W. Medical family therapy with couples facing infertility. *The American Journal of Family Therapy*. 1992; 20: 101-122

59. Nakamura K, Sheps S, Arck PC. Stress and reproductive failure: past notions, present insights and future directions. *J Assist Reprod Genet*. 2008; 25:47–620.

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