



International Journal of Reproductive Medicine & Gynecology

Research Article

Stress and Depression during Assisted Reproductive Technology Treatment - Need for Infertility Counselling - ②

S. Thenmozhi¹, Saraswathi Bhaskar^{1*} and K.S. Kavitha Gautham²

¹University of Madras, Chepauk, Chennai, India

²Bloom Fertility & Health Care, Velachery Chennai, India

***Address for Correspondence:** Saraswathi Bhaskar, Department of Counselling Psychology, University of Madras, Chepauk, Chennai - 600 0005, Tamil Nadu, India, Tel: +91-909-472-8260;
E-mail: therapist.saras@gmail.com

Submitted: 25 May 2018; **Approved:** 09 July 2018; **Published:** 12 July 2018

Cite this article: Thenmozhi S, Bhaskar S, Kavitha Gautham KS. Stress and Depression during Assisted Reproductive Technology Treatment - Need for Infertility Counselling. Int J Reprod Med Gynecol. 2018;4(2): 028-033.

Copyright: © 2018 Bhaskar S, et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Infertility is considered as a basic health issue in human reproductive care. It is clinically defined as a failure to achieve natural pregnancy after twelve or more months of regular unprotected sexual intercourse [1]. Research states that there are approximately 9% of couple's worldwide experiencing involuntary childlessness [2]. Infertility has been ranked as one of the greatest sources of stress in a person's life, comparable to a somatic disease such as cancer [3]. It is believed that stress experienced due to Assisted Reproductive Technology (ART) treatment can be ranked second to that the death of a family member or divorce [4,5].

The prevalence of infertility in India is between 3.9% and 16.8% [1]. It may be due to late marriage, the emphasis given to career growth over starting family, change in lifestyle.

Childlessness

Childlessness refers to couples not getting pregnant even after having normal unprotected sexual intercourse for (more than) one or two years [6]. Some of the major causes for childlessness are:

- a. Husbands infertility (40%)
- b. Wife's infertility(40%)
- c. Both infertile (5-10%)
- d. Idiopathic infertility (unexplained) (10-15%)

Is stress a source of infertility or vice versa?

Stress can be defined as a set of related events and conditions that persists over time and that are perceived to threaten significant social roles or domains. Newton et al. [7] describes stress as "a set of related events and conditions that persist over time and that are perceived to threaten important social roles or Domain". For most couples, the inability to conceive due to medical conditions by itself can be a source of stress. Couples who are pathologically fine, yet are psychologically susceptible to emotional factors such as worry and fear may experience performance anxiety [8]. Men with psychological stress mostly exhibit sexual disorders and erectile dysfunction. Anecdotal evidence state that early childhood negative sexual experiences can lead to sexual aversion. Irrespective of the source, stress, and infertility have an impact both causing pathological conditions and psychological disturbances during ART treatment.

Pathological causes of infertility

Several authors have discussed the concept of stress as an etiological factor related to infertility [9-19]. The different ways in which psychological stress reactions might influence reproduction have been suggested as follows [13]:

- I. By disturbing the secretion of gonadotropin
- II. By local effects of catecholamines on the uterus and on the functions of the fallopian tubes
- III. By immunological processes that can disturb implantation
- IV. By influencing behaviour, e.g. drug addiction and sexual problems.

The direct relationship of emotions and hormones necessary for fertility is evident from studies [20]. In addition, an association between psychological stress and sperm quality has been observed in some studies [11,21], while others have found that the effect of

psychological stress on sperm quality is small or non-existent [22]. Certain medical conditions for women like anorexia, bulimia and polycystic ovarian syndrome can change the HPO axis. This alters the women's reproductive hormones, her menstrual cycle, and future fertility. Certain drugs given for treatment of Psychiatric disorders and Seizure disorders can also cause Male sterility and subfertility [8].

Psychological causes of infertility

One of the major disturbances in any kind of infertility is the couple's uncertainty as to whether they will ever achieve natural parenthood. Studies have reported that ART treatment by itself can add to the stress [23,24]. In a collectivistic society, it can be stressful to manage the inquisitive queries by extended family and community about the delay in parenthood. Findings of a qualitative study [25], on the social status of childless couples in three ecological settings, evidenced that couples are under constant pressure from family and society reminding about their childlessness.

A study [26] points out the gender differences in the experiences of the childless situation: women experience considerable distress because of their "barrenness" and men face emotional pressure because of their sexual dysfunctions. It could be because women have to go through intrusive, invasive treatment than men. Several studies reflect that men also suffer from low self-esteem, anxiety, isolation, blame and greater sexual inadequacy [27-29]. Studies on stress levels for either of the couples have shown that psychological distress adversely affected the treatment process and to a large extent its outcome [30].

Need for infertility counseling

Psychological counseling provided with specific and practical focus is significant and supportive prior to Medically Assisted Reproduction [31]. Considering the effects of psychological disturbances during ART treatment, there is a need to connect the mind and body to explore if psychological counseling during medical treatment can be considered to improve fertility rate [32].

The survey site offers:

1. Medical counseling, which details couples about various options in ART procedure through the audiovisual presentation.
2. Financial counseling involving all aspects of the finances required for ART treatment and
3. Psychological counseling includes but not limited to: Grief due to infertility, stressors of ART treatment, coping with family.

Lately, some ART clinics give diet charts, recommend yoga and relaxation techniques during treatment.

The aim of this study is to identify the level of infertility related stress and depression of childless couples during treatment. Furthermore, the study will determine if couples in treatment are in favor of infertility counseling. Based on the findings, the study further proposes to design infertility counseling intervention module based on the phase of couple's diathesis, infertility diagnosis (male/female/unexplained) and the number of failure [33].

MATERIALS AND METHODS

The present study used the ex-post facto research design. Request for permission to conduct the study was pursued and granted by the ethical committee at the survey site. Through convenience sampling,

names of couples (taking treatment) were taken from the database. They were sent a consent form and were requested to participate in this study. Those who were willing were chosen and they signed the consent form. The couples age ranged from 29 - 45 and they have been married for over 5 years. While 47 couples signed the consent form, 40 chose to participate in the study and they responded to the question of “Do you favor psychological counseling during ART treatment?”

Inclusion criteria

The participants who fulfilled the following criteria were chosen for the study:

1. Ability to read and understand English and the local language, Tamil
2. Married for more than 5 years
3. primary infertility
4. No pre-existing psychopathology
5. Residing in the urban city

Measures

The demographic profile: The researcher gathered information from the participants on their age, educational level based on academic achievement, Socio-Economic Status (SES) based on the Kuppuswamy’s socioeconomic scale [34], religious faith based on religious practices and number of years married along with number of years of childlessness.

1. The Fertility Problem Inventory (FPI) measuring perceived infertility-related stress developed by Newton et al. [7]. This is a 46 item self-reporting scale on how much they agree or disagree with fertility-related concerns from 1 (Strongly disagree) to 6 (Strongly agree). The FPI questionnaire produces a global infertility-stress related stress score as well as score on five subscales: Sexual concern, relationship concern, need for parenthood, and rejection of childfree lifestyle. Reverse scoring is given to negative items. The tool demonstrated high internal consistency. The Cronbach’s a coefficient ranged from 0.77 to 0.87. Test-retest reliability after a 30-day interval was 0.83 for global stress for women and 0.84 for men. Cronbach an of global stress scale was 0.93.
2. The Patient Health Questionnaire - PHQ 9 [35] has nine question that assesses the Diagnostic Statistical Manual - IV [36] criteria for depression and score each of them from 0-3: 0 “not at all”, 1 “for several days”, 2 “more than half of the days”, and 3 “nearly every day”. Increasing scored indicate increasing severity with scores of 5, 10, 15 and 20. It represents mild, moderate, moderately severe and severe depression respectively. The PHQ-9 has good internal consistency and good test-retest reliability. A validity study revealed that besides making a criteria-based diagnosis of depressive disorders, it is valid for its clarity.

RESULTS

A total number of 40 couples took part in this survey. Majority of them reported Hinduism as their religious faith. Two-thirds of the couples lived in the nuclear family.

The demographic details of above table 1 indicate that number of

years of treatment varied between the couples and it could be due to male or female-specific issues that one need to consider, to proceed with the infertility treatment. 80% of the couples had undergraduate and postgraduate degree while 20% had a minimum of high school education. With regards to age, 31.25% of the couples were less than 30 years. They stated that they were seeking medical treatment because they wish to start a family soon after marriage. 42.5% of the couples ranged from 30-34 and they mentioned that they seek medical help because of self-induced and family pressures. 12.75% of the couple’s age ranged 35-39. 8.75% of the couple’s age ranged 40-44, while there were 7.5% of men in the age range of 40-44.

Table 2 reflect the level of FPI score: low stress, average stress, moderately high stress and high stress. The result revealed that 2.5% of men perceived low stress and there was 0% of women on low stress. 20% of men experienced average stress, while 12.5% of women experienced average stress. 52.5% of men perceived moderately high stress. 50% of women experienced moderately high stress. 25% of men reported high stress and 37.5% of the women experienced high stress. Overall among 40 couples, 2.5% did not experience any infertility-related stress, whereas the remaining 97.5% (cumulative) as couples perceived infertility-related stress ranging from moderately high to high stress during their treatment.

Table 1: Frequency distribution showing demographic details n = 80, (M = 40: W = 40)

	Dimension	Frequency of	Percent	Frequency of	Percent
		Men		Women	
Number of years in treatment	Less than 1	11	27.5	11	27.5
	1 to 4 years	19	47.5	20	50
	5 to 9 years	8	20	6	15
	10 to 14 years	1	2.5	2	5
	15 to 19 years	1	2.5	1	2.5
Educational Qualification	HSC	10	25	8	20
	UG	13	32.5	14	35
	PG and above				
		17	42.5	18	45
Age	Less than 30	6	15	19	47.5
	30 - 34	20	50	14	35
	35 - 39	7	17.5	4	10
	40 - 44	4	10	3	7.5
	45 and above	3	7.5	0	0

Table 2: Frequency distribution of infertility related stress - FPI

FPI	Frequency of Men	Percent	Frequency of Women	Percent
Low stress	1	2.5	0	0
Average stress	8	20	5	12.5
	21	52.5	20	50
Moderately high stress	10	25	15	
High stress				37.5



The results of PHQ (Table 3) was calculated based on the following Likert scale of: no symptoms, mild, moderate, moderately severe to severe depression. The findings revealed that 50% of the men and 30% of women did not experience depression. The couples averaged 28.5% in their mild depression score. Moderate depression was experienced by couples with an average score of 21.25%. Moderately severe depression was experienced by an average of 15% of the couples, out of whom 5% were women. Severe depression was experienced by women, while there was none in men who scored high on severe depression. The difference and high score on depression reveal that found that motherhood is the critical milestone in the life of a woman soon after marriage and it helps her to secure a position in the marital home and the society she is associated with [37]. Overall among 40 couples, 62.5% (cumulative) of the couples reported moderately severe to severe depression.

It is inferred from the table 4 that the significant difference between (mean = 160.98:175.17, "t" = 2.33) couples on global infertility score (FPI) indicated that women experienced higher stress than their partners. In Subdomain of sexual concern and need for parenthood, there is a significant difference between couples ("t" = 3.76, 2.33 respectively), the high mean score indicates that women perceived higher stress than their spouses.

In PHQ-9 there is a significant difference between male and female (Mean = 33.9, 36.32, "t" = 3.06) in their levels of depression and women experienced higher level of depression than men.

Figure 1 brings out the differences between the couples with regards to infertility-related stress and depression. Social concerns appear to be an important dimension that could influence depression in the childless couples. This finding is in line with previous studies [26,27-29] on childlessness in Indian scenario, which stigmatizes couples experiencing infertility. Women scored high stress in sexual concerns where feelings of pressure to "schedule sex" may have brought down their sexual desire. The result parallels with the findings of Himmel et al. [6] where the sexual life of childless couples become more "planned intercourse" or "sex on demand".

Women have higher need for parenthood than men. This is in line with findings of Balen and Bos [38] that women reported more stigma, harassment, and exploitation. It could be due to the cultural factor that childlessness or infertility is a woman's "fault" thereby causing isolation that can lead to depression. Overall the graph represents that women experienced higher in all the five subdomains than their spouses.

Findings in table 5 indicate, that there is a significant positive relationship in men women at 0.41 ($p < 0.01$) on FPI and a significant

Table 4: Mean, SD and "t" – value of five-dimensions of FPI & PHQ-9

	Group	Mean	SD	"t" Value
Dimensions of FPI	(N = 80 ; M= 40, W = 40)			
Social concern	Men	33.9	9.91	1.21
	Women	36.32	7.84	
Sexual concern	Men	19.02	6.53	3.76**
	Women	25.07	7.8	
Relationship concern	Men	26.57	7.21	1.07
	Women	28.5	8.74	
Rejection of childhood	Men	37.32	7.56	0.18
	Women	37.02	6.9	
Need for parenthood	Men	44.15	10.94	1.70*
	Women	48.25	10.5	
FPI Total	Men	160.97	28.89	2.33*
	Women	175.17	25.25	
PHQ - 9				
PHQ - 9- Total	Men	33.9	9.91	3.06**
	Women	36.32	7.84	

**p < 0.01, *p < 0.05

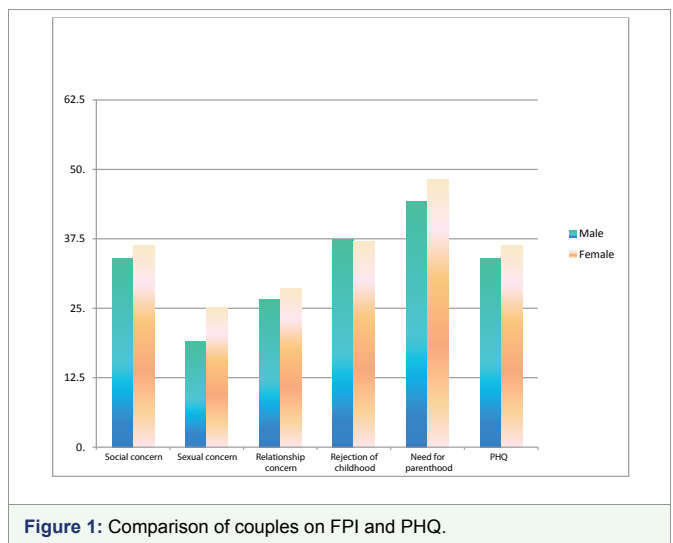


Figure 1: Comparison of couples on FPI and PHQ.

positive relationship between husband and wife at 0.52 ($p < .001$) on PHQ 9 during ART treatment.

DISCUSSION

It is a preliminary study of a larger research. The results of this study reveal, that a cumulative of 97.5% of the couples experienced stress and a cumulative of 62.5% reported depression. Women perceive elevated levels of infertility related stress and depression. The study confirms that one of the partners stress and depression is strongly correlated to the level of stress and depression of their spouses. The fact being that bearing children serves as a critical transition after marriage in the life of the couples [39]. Almost 47.5% of the couple's age was less than 30 and they have begun their treatment for infertility as early as the completion of the first year of marriage. This could be due to pressure from the family as

PHQ	Frequency of Men	Percent	Frequency of Women	Percent
	n = 40		Women	
			n = 40	
no symptom	20	50	12	30
mild	11	27.5	12	30
moderate	8	20	9	22.5
moderately severe depression	1	2.5	5	12.5
severe	0	0	2	5

Table 5: Pearson's correlation coefficient of couples on FPI & PHQ

Variable	FPI of women	PHQ of women
FPI- husband	0.41**	0.2
PHQ - husband	0.29	0.52**
**p < 0.01		

reported by Ganguly and Unisa [40]. However, women tend to be more distressed by the infertility experiences than men, even when the diagnosis was not attributed to her as is validated by Nene et al's findings [26]. The findings of this study are in line with a qualitative study finding by Reissman [41], where women are pushed to the extremities of embarrassment due to repetitive questioning in private and social events. Although, women in this study were qualified and were working prior to the beginning of ART treatment, inform that they chose to resign their job to reduce stress so that they could focus on starting a family. However, this study brings a point where women resigning their job during ART treatment can be counterproductive, because more free time compels them to get disturbed with their thoughts that can lead to stress and depression. The result reveals that the need for parenthood has caused high stress. 85% of the couples believe that infertility counseling will help them to go through ART treatment with reduced stress and depression.

CONCLUSION

It is inferred from the above results that childless couples, experience infertility-related stress and depression. The couples are willing to go through infertility counseling during ART treatment.

LIMITATIONS

This study has its own limitations. The sample size is small and so the findings of this study cannot be generalized to the larger population. The research was conducted in urban settings, hence, the study outcome may not be useful to the couples from rural areas.

RECOMMENDATIONS

Based only on quantitative methods, one cannot fully grasp the ground reality with regards to the infertility related experiences. Hence, further research using qualitative methods can be supplemented to compliment the current findings. Recent research suggests that a significant number of treatment dropouts are due to psychological factors [20]. At the same time, research also evidences that failure in one cycle does not constitute similar outcomes in subsequent cycles [42]. Sensitizing the couples about study findings could the drop rate could give hope to the couples. Hence infertility clinics can engage in constant efforts to sensitize the need for infertility counseling intervention to their ART treatment couples.

REFERENCES

- World Health Organization. Human Reproductive Program. Geneva, Switzerland. 2004. <https://goo.gl/EMvKJU>
- Boivin J, Bunting L, Collins JA, Nygren K. An international estimate of infertility prevalence and treatment-seeking: Potential need and demand for infertility medical care. *Human Reproduction*. 2007; 22: 1506-1512. <https://goo.gl/bw7PBy>
- Domar A, Zuttermeister P, Friedman R. The psychological impact of infertility: a comparison with patients with other medical conditions. *Journal of Psychosomatic Obstetrics and Gynecology*. 1993; 14: 45-52. <https://goo.gl/7f5o1c>
- Freeman EW, Boxer AS, Rickels K, Tureck R, Mastroianni LJ. Psychological

evaluation and support in a program of in vitro fertilization and embryo transfer. *Fertility and Sterility*. 1985; 43: 48-53. <https://goo.gl/4N6YdB>

- Baram D, Tourtelot E, Muechler E, Huang K. Psychosocial adjustment following unsuccessful in vitro fertilization. *Journal of Psychosomatic Obstetrics and Gynecology*. 1988; 9: 181-190. <https://goo.gl/fZoyur>
- Himmel W, Ittner E, Kochen M M, Michelmann HW, Hinney B, Reuter M, et al. Management of involuntary childlessness. *British Journal of General Practice*. 1997; 47: 111-118. <https://goo.gl/ERBeZb>
- Newton CR, Sherrard W, Glavac I. The fertility problem inventory: measuring perceived infertility-related stress. *Fertil Steril*. 1999; 72: 54-62. <https://goo.gl/otB4P2>
- Burns LH, Covington SN. *Psychology of infertility*. Infertility. 2006.
- Seibel MM, Taymor ML. Emotional aspects of infertility. *Fertil Steril*. 1982; 37: 137. <https://goo.gl/Kd9sDL>
- Harrison RF. Stress in infertile couples. *Proceedings of 7th International Congress on Psychosomatic Obstetrics and Gynecology*. Dublin. 1983.
- Harrison RF, O'Moore RR and O'Moore AM. Stress and fertility: Some modalities of investigation and treatment in couples with unexplained infertility in Dublin. *International Journal of Fertility*. 1986; 32: 153-159.
- Harrison KL, Callan VJ, Hennesey JF. Stress and semen quality in an in vitro fertilization program. *Fertil Steril*. 1987; 48: 633-636. <https://goo.gl/bFhFQ4>
- Reading AE, Chang LC, Kerin JF. Attitudes and anxiety levels in women conceiving through in vitro fertilization and gamete intra fallopian transfer. *Fertility and Sterility*. 1989; 52: 950-999. <https://goo.gl/8df5ui>
- Domar A, Seibel M, Benson H. The mind/body program for infertility: a new treatment program for women with infertility. *Fertil Steril*. 1990; 53: 246-249. <https://goo.gl/2juvw5>
- Strauss B, Appelt H, Bohnet HG, Ulrich D. Relationship between psychological characteristics and treatment outcome in female patients from an infertility clinic. *Journal of Psychosomatic Obstetrics and Gynecology*. 1992; 13: 121-133. <https://goo.gl/mzvx3R>
- Wasser SK, Sevall G, Soules MR. Psychosocial stress as a cause of infertility. *Fertil Steril*. 1993; 59: 685-689. <https://goo.gl/vQR3tb>
- Christie GL. The psychogenic factor in infertility. *Aust N Z J Psychiatry*. 1994; 28: 378-390. <https://goo.gl/5g5bnD>
- Vartiainen H, Suonio S, Halonen P and Rimon R. Psychosocial factors, female fertility and pregnancy a prospective study Part II: pregnancy. *J Psychosom Obstet Gynaecol*. 1994; 15: 77-84. <https://goo.gl/tTBwJM>
- Domar A. Stress and infertility in women: is there a relationship. *Psychotherapy Practice*. 1996; 2: 17-27. <https://goo.gl/Sg4qja>
- Deka PK, Sarma S. Psychological aspects of infertility. *British Journal of Medical Practitioners*. 2010; 3: 336. <https://goo.gl/3PoRC0>
- Ragni G, Caccamo A. Negative effect of stress of in vitro fertilization program on quality of semen. *Acta Europaea Fertilitatis*. 1992; 23: 21-23. <https://goo.gl/vSYogP>
- Hjollund NH, Bonde JP, Brink Henriksen T, Giwercman A, Olsen J. Reproductive effects of male psychological stress. *Epidemiology*. 2004; 15: 21-27. <https://goo.gl/n9unaf>
- Moller A, Fallstrom K. Psychological factors in the etiology of infertility: a longitudinal study. *J Psychosom Obstet Gynaecol*. 1991; 12: 13-26. <https://goo.gl/mLXZjy>
- Lalos A. Breaking bad news concerning infertility. *Hum Reprod*. 1999; 14: 581-585. <https://goo.gl/K97wzg>
- Baru A, Dhingra, R. Personal and interpersonal dimensions of childlessness in three different ecological systems. *Journal of Human Ecology*. 2004; 15: 289-294.
- Nene UA, Coyaji K, Apte H. Infertility: A label of choice in the case of sexually dysfunctional couples. *Patient Educ Couns*. 2005; 59: 234-238. <https://goo.gl/9pSTKG>
- Lee S. *Counseling in male infertility*. Oxford: Blackwell Science. 1996.
- Webb RE, Daniluk J C. The end of the line: Infertile men's experiences of

- being unable to produce a child. *Men and Masculinities*. 1999; 2: 6-25. <https://goo.gl/QM2Sx9>
29. Sandlow JI. Shattering the myths about male infertility *Postgrad Med*. 2000; 107: 235-239. <https://goo.gl/6uCuKN>
30. Cousineau TM, Domar AD. Psychological impact of infertility. *Best Pract Res Clin Obstet Gynaecol*. 2007; 21: 293-308. <https://goo.gl/Lv93no>
31. Lila Z Hakim, Christopher R. Newton, Deborah MacLean-Brine, Valter Feyes. Evaluation of preparatory psychosocial counselling for medically assisted reproduction. *Hum Reprod*. 2012; 27: 2058-2066. <https://goo.gl/iWdnXi>
32. De D, Roy PK, Sarkhel S. A psychological study of male, female related and unexplained infertility in Indian urban couples. *J Reprod Infant Psychol*. 2017; 35: 353-364. <https://goo.gl/gJNeF5>
33. Diamond R, Kezur D, Myers M, Constance C N, Weinshel M. (Eds). *Couple therapy for infertility*. New York: The Guildford Press. 1999. <https://goo.gl/m6u64w>
34. Kumar N, Gupta N, Kishore J. Kuppuswamy's socioeconomic scale: updating income ranges for the year 2012. *Indian Journal of Public Health*. 2012; 56: 103-104. <https://goo.gl/GoGf9N>
35. Kroenke, Kurt, Spitzer, Rober L. The PHQ-9: A new depression diagnostic and severity measure. *Psychiatric Annals*. 2002; 32: 1-7. <https://goo.gl/8XC642>
36. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental disorders (5th Ed.)*. Washington. 2013. <https://goo.gl/Zo2y2m>
37. Bhatti F, Jeffrey R. Girls' schooling and transition in marriage and motherhood: exploring pathways to young women's reproductive agency in Pakistan. *Comparative Education*. 2012; 48: 149-166. <https://goo.gl/nTSpT9>
38. Bos H, van Balen F, Visser A. Social and cultural factors in infertility and childlessness. *Patient Education and Counseling*. 2005; 59: 223-225. <https://goo.gl/wGuWpP>
39. Mehta B, Kapadia S. Experiences of childlessness in an Indian context: a gender perspective. *Indian Journal of Gender Studies*. 2008; 15: 437-460. <https://goo.gl/9s97HY>
40. Ganguly S, Unissa S. Trends of Infertility and Childlessness in India: Findings from NFHS data. *Facts Views Vis Obgyn*. 2010; 2: 131-138. <https://goo.gl/cfs9un>
41. Riessman CK. Stigma and everyday resistance practices: childless women in South India. *Gender and Society*. 2000; 14: 111-135. <https://goo.gl/AE1tgc>
42. Ellen R Klinkert, Frank JM Broekmans, Caspar WN Looman, Egbert R. A poor response in the first in vitro fertilization cycle is not necessarily related to a poor prognosis in subsequent cycles. *Fertility and Sterility*. 2004; 81: 1247-1253. <https://goo.gl/dcrq6Z>