Survey of reasons for discontinuation from *in vitro* fertilization treatment among couples attending infertility clinic

Grishma Kulkarni, Nimain C. Mohanty[1], Ipseeta Ray Mohanty, Pradeep Jadhav, B. G. Boricha[2]

Department of Pharmacology, Mahatma Gandhi Mission Medical College, Kamothe, [1]Department of Pediatrics, [2]Obstetrics and Gynecology, Mahatma Gandhi Mission Medical College Hospital for Women and Children, Kalamboli, Navi Mumbai, Maharashtra, India

Address for correspondence:
Dr. Nimain C. Mohanty, Professor of Pediatrics and Medical Superintendent, Mahatma Gandhi Mission Medical College and Hospital, Kalaomboli, Navi Mumbai - 410 218, Maharashtra, India.
E-mail: ipseetamohanty@yahoo.co.in

Received: 16.06.2014
Review completed:10.09.2014
Accepted: 22.10.2014

Access this article online

Quick Response Code:

Website: www.jhrsonline.org

DOI: 10.4103/0974-1208.147491

ABSTRACT

BACKGROUND: With the increase in infertility burden, more and more couples are opting for *in vitro fertilization* (IVF). Despite the availability of various treatment options, the major concern that needs to be addressed is the reasons why such couples, initially motivated so strongly, drop out in fairly high numbers from IVF cycles. With this point of view the study was designed. **AIM:** The objective of this study was to explore the reasons why couples discontinue fertility treatment. **SETTINGS AND DESIGN:** This retrospective study was carried out among couples in the age group of 20-40 years who opted for IVF at Tertiary care hospital and a private infertility center. **MATERIALS AND METHODS:** Medical records for 3 years (2009-2012) were taken out and included in the study for analysis. Socio-demographic details along with indication for IVF and reasons for drop-separate IVF therapy were recorded on case record form and were analyzed. **RESULTS:** Twenty-one percent of the patients had tubal pathology, thus making it the commonest female related factor for indication of IVF. Oligoasthenospermia (13%) was the commonest cause of male related infertility factor. Financial burden was the primary cause for terminating treatment in majority of the IVF cases. **CONCLUSIONS:** Financial burden (62.5%) was the commonest reason for drop out among couples from IVF cycle.

KEY WORDS: Drop out, infertility, *in vitro* fertilization,

INTRODUCTION

Infertility remains a major clinical and social problem affecting one out of six couples in India.[1] Most common causes of infertility are sperm abnormalities, ovulation dysfunction, endometriosis, reduced ovarian reserves and tubal pathology; besides unexplained reasons of infertility owing to combined male and female factors.[2] *In vitro* fertilization (IVF) offers a new hope for conception for such couples, when other infertility treatments are not successful.[3]

The sub-fertile couples consulting IVF clinics are commonly regarded as highly motivated to achieve conception. However, the regimens applied for IVF are diverse, expensive, time consuming, complex and sometimes stressful. Many couples do not endure the strains of this treatment modality and discontinue IVF therapy. Discontinuation from IVF treatment should be considered an adverse treatment outcome, since early cessation of treatment deprives the couple an optimal cumulative chance of achieving pregnancy, and therefore impacts on the overall success of the IVF program.[4]

High rates of drop-out are frequently encountered in IVF treatment. The drop out rates reported among couples undergoing IVF treatment shows a large variation from 23 up to 45 and 60% between different countries as well as IVF centers within the same country.[5,6] It may be highlighted that it is difficult and inappropriate to compare dropout rates between centers and countries, due to heterogeneity with respect to cost, reimbursement policies, accessibility to infertility services, etc.[7,8] This phenomenon of dropout in fertility treatment has scarcely been investigated

in India. Insight into the factors that influence the decision of couples to discontinue treatment and their reasons for dropping-out may allow early identification of women at risk and the tailored interventions to improve treatment compliance, and as a result, improve cumulative pregnancy rates and the cost-effectiveness of IVF programs.

The success rate of first cycle of IVF remains around 20% depending upon the age of the couple. However, cumulative success rate of multiple cycles subsequently increases with second and third attempt. The previous studies on IVF have shown that in the women of less than 35 years of age, the success rate was 21% after 1st cycle and it was increased by 40% by the 5th cycle.[9] Literature has suggested that there is significant drop out just after a first IVF cycle which makes the overall success rate of IVF lower.[9,10] With this context in the background the present study was designed to evaluate the reasons for discontinuation from fertility treatment among the couples. The results are bound to help in planning appropriate corrective measures to improve optimize and economize the IVF outcomes starting from grass root to the policy planners' level.

MATERIALS AND METHODS

Permission of the Ethics committee was obtained prior to the conducting this research study.

Type of study

Retrospective, observational study.

Study population and site

A retrospective analysis was carried out in couples/ patients between the age group of 20 and 40 years who opted for IVF at a tertiary care hospital and Private Infertility center.

Study duration

The record of 3 years (2009-2012) was taken into consideration and the study was conducted over a period of 4 months (May-August 2013).

Sample Size

Eighty-eight cases of IVF were included in this study.

Inclusion criteria

- The study mainly included records of patients who attended the IVF clinics during 2009-2012 who had exhausted all other means of treatment for conception and IVF was sought as their last resort
- Couples between the age group of 25 and 40 years who opted for IVF
- First cycle of IVF treatment.

Exclusion criteria

- Couples below age group of 25 and above 40 years who opted for IVF
- Repeated IVF cycles
- Any add-on or concomitant therapy for fertilization.

Self-designed Case Record Form

Following details were recorded from the patients' medical records in the self-designed case record form. Patient privacy and confidentiality was maintained

1. Socio-demographic data such as age, weight, height, body mass index, menstrual cycle regularity, socio-economic status, addiction (Alcohol, smoking and tobacco) and previous history of *in vitro* fertilization.
2. Indication for *in vitro* fertilization: Female factors for Infertility such as endometriosis, polycystic ovarian disorder (PCOD), hyper-prolactinemia, hypothyroidism, reduced ovarian reserves, tubal factors, pelvic adhesions were recorded in the study. Male factors such as - oligo-asthenospermia, azoospermia, necrospermia (Complete asthenospermia) as well as combined (Male and female) factors of fertility were also recorded.
3. Reasons for drop-out from ongoing IVF cycle such as spontaneous pregnancy, failure to correct weight, financial burden, psychological reasons, opting for alternative methods such as adoption, medical problems and social pressure were studied.

Statistics

The data so recorded was tabulated and analyzed using descriptive statistics. Data was entered and analyzed with Microsoft Excel 2007. Values were expressed as Actual numbers, Percentage and Mean ± Standard Deviation.

RESULTS

Demographical profile

In this study, the mean age of the female participants who had undergone IVF was 30.9 years. Table 1 highlights the socio-demographic details of IVF cases. Majority (39%) of the women were in the age group of 25-30. Thirty-four percent and 16% of females were in the age range of 31-35 and 36-40 years, respectively. Majority of the females belonged to the middle-income group (52%) an about one-fifth to the low-income group (19%).

Indications for IVF

The indications for undergoing IVF are summarized in Figure 1and Table 2. The tubal factors dominated in case of women (22%), followed by reduced ovarian reserve (15%). Male factors were found to be to the tune of 20%. Oligo-asthenospermia was found to be the most important cause among male partners (13%), followed by necrospermia (4%) and azoospermia (3%). Table 3 summaries the various reasons for cancellation/failure of ongoing cycle in IVF.

Table 1: Socio-demographic details of females undergone IVF

Parameters	Numbers (*n*=100)	Percentage
Age in years (mean=30.9)		
20-25	12	12
26-30	38	38
31-35	34	34
36-40	16	16
Body mass index kg/m^2		
18.5-25	71	71
25-30	29	29
More than 30	0	0
Household income group		
High	29	29
Middle	52	52
Low	19	19
Menstrual cycle		
Regular	84	84
Irregular	16	16
Addiction		
Yes	0	0
No	100	100
Previous H/O of undergone IVF		
Yes	12	12
No	88	88

IVF=*In vitro* fertilization

Table 2: The various indications for IVF

Factor/cause	Indication	Number (*n*=100)	Percentage
Female related	Endometriosis	10	10
	Polycystic ovarian syndrome	10	10
	Hyper-prolactinemia	0	0
	Hypothyroidism	0	0
	Reduced ovarian reserves	14	14
	Tubal factors	21	21
	Pelvic adhesions	2	2
Male related	Oligo-asthenospermia	13	13
	Azoospermia	4	4
	Necrospermia	3	3
Both combined (female and male)	Endometriosis+ Oligo-asthenospermia	3	3
	Reduced ovarian reserves+Oligo-asthenospermia	1	1
	Tubal factors+ Oligo-asthenospermia	1	1
	Tubal factors+ Necrospermia	1	1
Unexplained	Unknown (idiopathic)	17	17

IVF=*In vitro* fertilization

Drop-out from ongoing IVF Cycle

Financial burden (62.5%), adoption of alternate methods such as adoption (6.25%), reduced ovarian reserves (25%) and Crohns disease (6.25%) were the major reasons for couples to drop out from an ongoing IVF cycle [Figure 2, Tables 4, 5].

Table 3: The various reasons for cancellation/failure of ongoing cycle in IVF

Reasons for cancellation/failure	Number (out of 13)	Percentage
Ovarian hyper stimulation syndrome	3	23.07
Poor response	5	38.46
Empty follicle syndrome	1	7.69
Lack of fertilization	2	15.38
Inability of husband to produce semen sample on the day of pick up	0	0
Immature oocyte collection	0	
Thickened endometrium	2	15.38
Others	0	0

IVF=*In vitro* fertilization

Table 4: Drop out among patients who did not conceive in first cycle of IVF

Result	Number (*n*=81)	Percentage
Came back for the 2nd cycle	27	33.33
When contacted they: (*n*=36)		
Did not co-operate	16	19.75
Reconsider coming back for another cycle	5	6.17
Could not be contacted	15	18.51
Dropped out of IVF treatment (*n*=18)		
Financial reasons	10	12.34
Medical reasons	5	6.17
Alternatives	1	1.23
Psychological reasons	1	1.23
Others	1	1.23

IVF=*In vitro* fertilization

Table 5: Reasons for complete drop out from IVF modalities

Reason	Number (*n*=16)	Percentage
Spontaneous pregnancy	0	0
Failure to correct weight	0	0
Obesity or under weight		
Financial burden	10	62.5
Psychological reasons (specify)	0	0
Alternatives (adoption etc)		
Adoption	1	6.25
Social pressure (specify)	0	0
Medical problems (*n*=5)		
Reduced ovarian reserves	4	25
Crohns disease	1	6.25
Others (specify)	0	0

IVF=*In vitro* fertilization

DISCUSSION

Reproductive health is a state of complete physical, mental and social well-being in all aspects relating to the reproductive system and to its functions and processes. Infertility, therefore, is a basic component of reproductive health and its prevention and appropriate treatment, where feasible are essential.

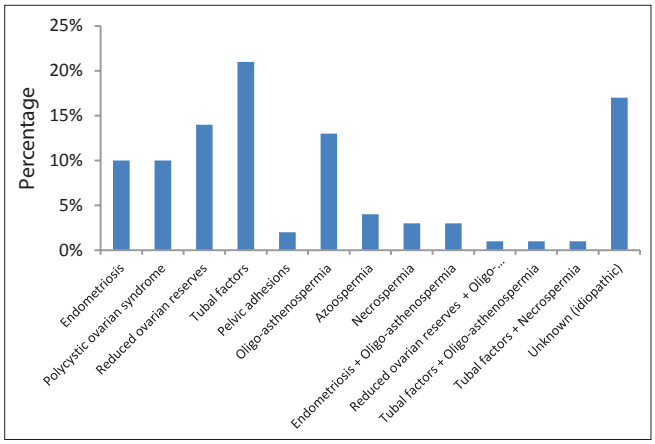

Figure 1: Infertility factors warranting IVF treatment among couples

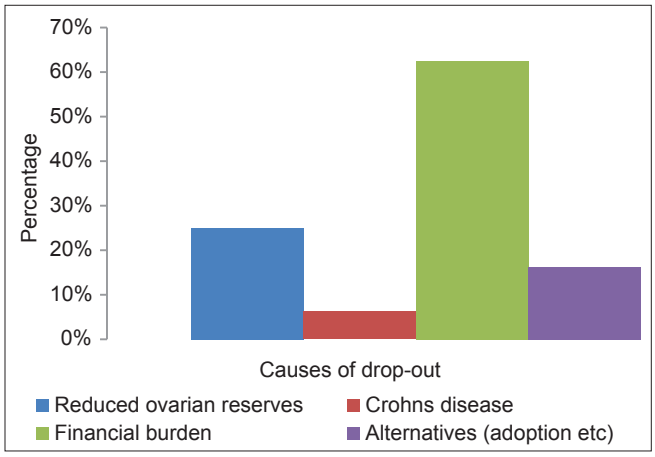

Figure 2: Causes of drop-out from IVF therapy among couples

Infertility is a world-wide problem affecting people of all communities, though the cause and magnitude may vary with geographical location and socio-economic status. It is estimated that globally between 60 and 80 million, couples suffer from infertility every year, of which probably between 15 and 20 million, are in India alone. The magnitude of the problem calls for urgent action, particularly when in the majority of cases the infertility is avoidable.[1]

Over the years with the advancement in knowledge of reproductive physiology and availability of sensitive and specific diagnostic methods, infertility management has improved considerably. A number of clinics specializing in infertility management have come up which offer a wider range of treatment options. Techniques like IVF have superseded older therapies, and in some cases have provided a backup when all other therapeutic options fail. India's first scientifically documented IVF baby (Harsha) was born in 1986.[11]

While *in vitro* fertilization (IVF) technology is a well-established treatment for infertility initiated almost 35 years ago, the socioeconomic determinants of IVF success (i. e., live-births) are not well understood. A primary reason for this lack of understanding has been limited data availability on IVF patient characteristics.

In the present study, the mean age of the female participants who underwent IVF was 30.9 years. However, 34% and 16% of females were in the age group of 31-35 and 36-40 years, respectively. If these female could have been counseled earlier, the chances of the successful IVF outcome could have increased as age is an important determinant of a positive pregnancy outcome. Although IVF is an expensive treatment, it is interesting to note that majority of the females belonged to the middle-income group and about one-fifth to the low-income group.

Indications for IVF

Present study reveals that the female factors (57%), male factors (20%), combined male and female factors (6%) were the infertility causes that necessitated IVF therapy. It corroborated findings in the study conducted by Olatungi and Sule-Odu regarding the pattern of infertility cases which showed that male factor accounted for 26.8% of cases, female factor for 51.8% and both male and female factors for 21.4% of cases.[12]

The present study showed that 21% of the women had tubal pathologies leading to infertility. Infectious diseases are very much prevalent in the current scenario clinically which could be the cause of such tubal pathology. In a study conducted by Singh *et al.*, 140 women with an indication for IVF were analyzed. Of these 70 patients (50%) had tubal factors responsible for infertility. The prevalence of genital tuberculosis in tubal factor infertility was 34 out of 70 (48.5%).[13] Such figure re-emphasizes the need for early tuberculosis screening for infertility as a cause in our country scenario where latent tuberculosis is almost 80%.

Followed by tubal factors, the second-most common cause of infertility among females was reduced ovarian reserves. It accounted for 14% of all the indications. Patients with advanced endometriosis tend to have reduced ovarian reserves due to surgical interventions, especially for endometrioma of more than 4-cm size inevitably damaging normal ovarian tissue reserves. IVF becomes the best and sometimes the only option to achieve a healthy pregnancy in such cases.[14]

The incidence of oligo-asthenospermia among male partners was 13%. Combinations of adverse lifestyle factors could have a detrimental impact on sperm, not only in terms of motility but also on sperm count. It has been reported that lifestyle factors include BMI, age, caffeine

consumption, sexual behavior, smoking, stress and cell phone tower radiations may affect the sperm count as well as quality.[15]

Reasons for drop out from IVF therapy

Patients who did not conceive accounted for 81%. Out of these, 33.33% continued treatment and consented to go for a second IVF cycle. The remaining one-fourth of them did not consent to be a part of the study and another one-fourth could not be contacted. Among the couples who confirmed to the inclusion criteria; financial burden (62.5%), adoption of alternate methods such as adoption (6.25%), reduced ovarian reserves (25%) and Crohns disease (6.25%) were the major reasons stated by couples for drop-out from an ongoing IVF cycle.

It is interesting to note that unlike the International statistics varying from country to country, stress (39%), psychological and physical burden (28%),[16,17] was not the reason for drop out of couples from IVF treatment found in the present study. It may therefore be emphasized that psychological cause may not play a major decisive role among couples discontinuing fertility treatment in the Indian set up.

Of the entire reasons, 62.5% accounted for financial burden, a significant finding of the study, unlike in the West.[5,18] As stated in the socio-demographic details the middle-income group accounts for a whopping 52% and low-income group 19%, thus confirming the financial burden to undergo repeated IVF cycles. It is encouraging that in spite of the financial constraints the majority of the couples consented for the first IVF cycle. However, subsequently if repeated cycles of IVF are indicated for such couples, it may be speculated that these couples may drop out in the future owing to their financial limitations, reducing the overall cumulative pregnancy outcomes.[9]

Currently, in India most of the facilities for IVF are offered through the private sector in few metropolitan cities. These high costs are the consequence of expensive infrastructure, drugs required for inducing multiple ovulations and maintenance expenses. In addition, the infertile couples have to go through stress, agony and loss of time which are difficult to quantitate. The private IVF setups available today, mainly in the cosmopolitan cities, have the latest state-of-the-art facilities. Interaction between such private clinicians and the government organizations could be worked out in a manner which is complimentary to each other. Exchange of expertise or technologies between these institutions might help to reduce costs.[1,19]

This would also ensure optimum utilization of equipment as well as resources. Another aspect worth considering could be sharing of equipment which would not only help in cutting costs but also ensure optimum utilization. Most of the equipments and the supplies including drugs used for IVF are imported. Development of indigenous technologies, pooling of some of the supplies and waiving of import duties might help in curtailing the expenses.[11]

From the ethical point of view, no infertile couple who could have a child through the use of available technologies such as IVF should be denied the treatment regardless of the cost involved. Therefore, efforts should be directed at all levels to improve the cost-effectiveness of IVF programs.

CONCLUSIONS

Based on the study results, it may be concluded that tubal factors among females and oligo-asthenospermia among males were the predominant factors that warranted IVF treatment. Financial burden proved to be the major reason for drop-out among couples from the on-going IVF therapy. The result will help in planning appropriate corrective measures to improve, optimize and economize IVF outcomes.

REFERENCES

1. Anand Kumar TC. *In vitro* fertilization and embryo transfer in India. ICMR Bull 1986;16:41.
2. Kamel RM. Management of the infertile couple: An evidence-based protocol. Reprod Biol Endocrinol 2010;8:21.
3. Schuler AM, Sammell JG. Infertility and Assisted Reproduction. Vol. 1. Cambridge University Press; 2008. p. 228.
4. Verberg MF, Eijkemans MJ, Heijnen EM, Broekmans FJ, de Klerk C, Fauser BC, *et al*. Why do couples drop-out from IVF treatment? A prospective cohort study. Hum Reprod 2008;23:2050-5.
5. Domar AD, Smith K, Conboy L, Iannone M, Alper M. A prospective investigation into the reasons why insured United States patients drop out of *in vitro* fertilization treatment. Fertil Steril 2010;94:1457-9.
6. Van den Broeck U, Holvoet L, Enzlin P, Bakelants E, Demyttenaere K, D'Hooghe T. Reasons for dropout in infertility treatment. Gynecol Obstet Invest 2009;68:58-64.
7. Brandes M, van der Steen JO, Bokdam SB, Hamilton CJ, de Bruin JP, Nelen WL, *et al*. When and why do subfertile couples discontinue their fertility care? A longitudinal cohort study in a secondary care subfertility population. Hum Reprod 2009;24:3127-35.
8. Roest J, van Heusden AM, Zeilmaker GH, Verhoeff A. Cumulative pregnancy rates and selective drop-out of patients in *in vitro* fertilization treatment. Hum Reprod 1998;13:339-41.
9. Macaldowie A, Wang YA. Chambers GM and Sullivan EA 2012. Assisted reproductive technology in Australia and New Zealand 2010. Assisted reproduction technology series no. 16.
10. Land JA, Courtar DA, Evers JL. Patient dropout in an assisted reproductive technology program: Implications for pregnancy rates. Fertil Steril 1997;68:278-81.
11. Year Book 1995-96. Family Welfare Programme of India. Department of Family Welfare, Ministry of Health and Family Welfare, Government of India; 1997. p. 64.
12. Olatunji AO, Sule-Odu AO. The pattern of infertility cases at a university hospital. West Afr J Med 2003;22:205-7.
13. Singh N, Sumana G, Mittal S. Genital tuberculosis: A leading cause for

infertility in women seeking assisted conception in North India. Arch Gynecol Obstet 2008;278:325-7.
14. Busacca M, Vignali M. Endometrioma excision and ovarian reserve: A dangerous relation. J Minim Invasive Gynecol 2009;16:142-8.
15. Wogatzky J, Wirleitner B, Stecher A, Vanderzwalmen P, Neyer A, Spitzer D, *et al*. The combination matters-distinct impact of lifestyle factors on sperm quality: A study on semen analysis of 1683 patients according to MSOME criteria. Reprod Biol Endocrinol 2012;10:115.
16. Domar AD. The relationship between psychological distress and infertility treatment discontinuation: An editorial. Fertil Steril 2004;81:271-3.
17. Strauss B, Hepp U, Steading G, Mettler L. Psychological characteristics of infertile couples; can they predict pregnancy and treatment persistence? J Comm Appl Soc Psychol 1998;8:289-301.
18. Olivius C, Friden B, Borg G, Bergh C. Why do couples discontinue *in vitro* fertilization treatment? A cohort study. Fertil Steril 2004;81:258-61.
19. Rajkhowa M, McConnell A, Thomas GE. Reasons for discontinuation of IVF treatment: A questionnaire study. Hum Reprod 2006;21:358-63.

How to cite this article: Kulkarni G, Mohanty NC, Mohanty IR, Jadhav P, Boricha BG. Survey of reasons for discontinuation from *in vitro* fertilization treatment among couples attending infertility clinic.
J Hum Reprod Sci 2014;7:249-54.
Source of Support: ICMR-STS **Conflict of Interest:** No