Prevalence of Different Factors Responsible for Infertility

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Abstract

The present paper deals with investigation of common causes of infertility in human beings. Among the 1000 cases studied at Asian Institute of Infertility Management and Shefali Jain Test Tube Baby Centre during the period of Oct 2010 to Oct 2011, varied outcomes were experienced. Among the infertility cases it is very clear that maximum infertility is due to female factors (30.2%). Infertility in females was due to ovulation problem and most infertility cases were seen in age group of 35 to 40. Male factors also contributed substantially (19.5%) to infertility. Causes of infertility in males is due to absence of sperm in semen (azoospermia), low count of sperm, motility problem and most infertility cases were seen in age group of 35 to 40. However, in majority of infertility cases (37%) the cause of infertility remain unexplained. All the 1000 cases were classified according to their occupations in to 06 groups. Maximum cases were reported from the group I i.e. academicians, advocates, accountants, bank workers. Farmers stood next in the infertility series. The rest of the groups are at average risk of infertility.

Introduction

Challenges to human fertility arise from many conditions caused by genetic abnormalities, infectious or environmental agents and behavior. Aging also places limits to fertility. Recent trends toward postponing age at first pregnancy have highlighted the natural limits of fertility and accelerated the development and use of medical technology to overcome such limits. Half of the couple trying for pregnancy succeeds within 3 months, increasing to over 85% by the end of first year[1]. Infertility is defined by an unsuccessful waiting time to pregnancy of 12 months, despite frequent unprotected intercourse[2]. One in six couple is subfertile[3]. 30% of subfertile couples have no identifiable medical cause[4] and over 70% of these conceive within a further 24 months of trying without medical help[5]. Thus Infertility is mainly classified in two types; Primary Infertility is the term used to describe a couple that has never been able to conceive a pregnancy, after a minimum of one year of attempting to do so through unprotected intercourse. Secondary Infertility is the term used to describe couples who have previously been pregnant at least once, but had not been able to achieve another pregnancy.

Infertility affects men and women equally. Most infertility cases (85-90%) were treated with medication or surgery. Improvements in fertility treatment had made it possible for many women to become pregnant. These new and advanced technologies include Intra Uterine Insemination (IUI), In Vitro Fertilization (IVF) and Intra Cytoplasmic Sperm Injection (ICSI). Differences in individual and life style characteristics have been suggested to have a role in the cause of infertility[6-9] and in the success of treatment[10-12]. Although much work still must be completed to fully determine the involvement of various factors responsible for infertility. Much of the research work is required to determine interactions of genetics, environment and ethnic background on fertility. Using this knowledge, clinicians will be better able to treat infertile patients and make knowledgeable decisions about the use of Assisted Reproductive Techniques (ART).

Material and Methods

A survey was conducted at Asian Institute of Infertility Management (AIIM) and Dr. Shefali Jain test tube baby center, Indore, between Oct 2010 to Oct 2011. The study includes 1000 cases of infertility who visited the center for treatment. Male and female partners were interviewed and counseled before any treatment. The interview questions mainly included TTP- Time to Pregnancy (the interval of exposure to unprotected intercourse from discontinuing birth control methods till conception), contraceptive use, pregnancy planning, previous fertility problems / pregnancies, gynecological disease / surgery, individual lifestyle factors including age, weight, height, tobacco consumption, smoking, alcohol consumption, coffee and tea intake, recreational drug use, known fertility/health problems and surgery, and the couple's coital frequency. Additionally couple's residential address, occupations and income were also asked which can be used as an indicator of the living standard. The information thus gathered was anonymous and confidentiality was preserved.

Table-1
Infertility Etiology

S.No.	Cause	No. of patients	%
1	Unexplained	370	37
2	Male factor	195	19.5
3	Female factor	302	30.2
4	Multiple factors	133	13.3

Results and Discussion

Out of the case history of 1000 patients, in 370 cases the causes of infertility were unexplained, 195 corresponded to male factor, 302 cases of infertility were because of female factors while in 133 cases the cause remains multiple (table 1). Figure 1 shows the distribution of different female factors viz. ovulation factor, tubal factor, endometriosis and uterine problems in decreasing order. Similarly figure 2 shows the cause of infertility in males, where the major contributors are azoospermia, sperm count, motility and sperm morphology in decreasing order.

The entire cases of infertility were divided into six groups as shown in table 2. This will enable us to study the interrelation of infertility and living standard, amount of stress, occupational hazards etc. As observed in table the group I have highest level of infertility followed by group II. Rests of the groups are considered at moderate level.

Infertility is a global concern[13]. Approximately 167 million ever married woman aged 15-49 years in developing countries were infertile[14]. Infertility rates exceed 30% in sub-Saharan Africa[14]. According to UN ranking, India is on 77th rank and fertility rate from 2000-2005 is 3.11 and fertility rate from 2005-2010 is 2.81. Infertility has multiple dimensions, ranging from biomedical to the social. The interactions between these factors are very complex and difficult to understand. It is this reason even today in majority of cases the reasons for infertility remains unexplained. Our study also indicates that out of 1000 cases, in 370 cases the reasons for infertility were unknown. Variety of defects in male and female were responsible for infertility. We have examined the proportion of different factors in males and females responsible for infertility viz. ovulation problem, tubal factor, endometriosis, uterine problem in females and azoospermia, low sperm count, motility and sperm morphology in males. The metabolic disorder associated with poly cystic ovary (PCO) syndrome has highlighted the link between overeating, insulin resistance and endocrine changes that reduce fertility in woman with poly cystic ovary syndrome[15]. Obesity is associated with ovulatory and menstrual dysfunction, infertility, increased risk of miscarriage and decreased effectiveness of ART in woman[16] and with erectile dysfunction and decreased androgen production in man[16]. Majority of infertility problems is preventable using available

techniques. The age effect on fertility is certainly clinically relevant. As shown in figure 3 and 4 infertility problems increases with age in both males and females. The effect of woman's age on fertility is well recognized[17]. Indeed woman's age is one of the two most important factors influencing the probability of conceiving without medical intervention in cases of unexplained subfertility; the other is the duration of trying for pregnancy[18]. Furthermore, studies of donor insemination, donor oocyte and in vitro fertilization programe have demonstrated the important role that woman's age has in the success of the treatment. The effect of age of males on infertility on the other hand, remains uncertain[19].

In order to check and confirm other social and environmental factors responsible for decrease in fertility the people of the same kind of occupation are grouped together in our study. It is clear from the data that the group I which comprises of academicians, advocates, accountants, bank workers showed highest level of infertility. Use of cotraceptive for delaying child birth is more common among the profesionals and other higher income groups, making this group more vulnerable to the cumulative effect of the cause of infertility, including ageing. Stress also is an important factor prevalent in professionals, responsible for infertility. Group II comprise of farmers which stood second in our study probably due to their high exposure of pesticides and other harmful chemicals. Although not indicated in the study but alcohol consumption and use of tobacco in any form, particularly smoking, has significant effect on decreasing fertility[20-21].

Conclustion

Infertility is a very common problem for couples today. The management of infertility is one of the most important tasks. The age effect on fertility is certainly clinically relevant. Infertility problems increase with age in both males and females. Anatomical factors are responsible for infertility but there are many other factors which are responsible for infertility like pollution, urban/rural life style of people. Use of contraceptive for delaying child birth is more common among the profesionals and other higher income groups, making this group more vulnerable to the cumulative effect of the cause of infertility, including ageing. Stress also is an important factor prevalent in professionals, responsible for infertility. Assisted conception technique's success rates are not 100% because of complexity, expensive, lack of awareness, fear and rituals of the people. Thus, the problem of infertility can be managed to some extent by avoiding late marriage, baby at right time, healthy life, good and healthy food, junk food avoidance, medication, stress free life, regular exercise.

References

1. Bongaarts J.A., Method for estimation of fecundability Demography, **12,** 645-660 **(1975)**

2. ESHRE Capri workshop, Guidelines to the prevalence, diagnosis, treatment and management of infertility, *Hum Reprod*, **11**, 1775-807 **(1996)**

3. Hull M.G.R., Glazener C.M.A., Kelly N.J., Conway D.I., Foster P.A., Hinton R.A., et al., Population study of causes, treatment and outcome of infertility, *BMJ* **291**, 1693-7 **(1985)**

4. Templeton A., Fraser C. and Thompson B., Infertility - epidemiology and referral practice, *Hum Reprod*, **6**, 1391 **(1991)**

5. Hull MGR, Infertility treatment, relative effectiveness of conventional and assisted conception methods, *Hum Reprod*, **7**, 785-96 **(1992)**

6. Howe G., Westhoff C., Vessey M. and Yeates D. Effects of age, cigarette smoking, and other factors on fertility, findings in a large perspective study, *BMJ*, **290**, 1697-700 **(1985)**

7. Mueller B.A., Daling J.R., Weiss N.S. and Moore D.E., Recreational drug use and the risk of primary infertility, *Epidemiology*, **1,** 189-92 **(1990)**

8. Zaadastra B.M., Seidell J.C., Van Noord P.A. and habbema J.D., Vrieswijk B. et al, Fat and female fecundity, prospective study of effect of body fat distribution on conception rates, *BMJ,* **306,** 484-7 **(1993)**

9. Augood C., Duckitt K. and Templeton A.A., Smoking and female infertility, A systematic review and meta analysis, *Hum Reprod*, **13**, 1532-9 **(1998)**

10. Rosevear S.K., Holt D.W., Lee T.D., Ford W.C., Wardle P.G. and Hull M.G., Smoking and decreased fertilization rates in vitro, *Lancet*, **340**, 1195-6 **(1992)**

11. Clark A.M., Thornley B., Tomlinson L., Galletley C. and Norman R.J., Weight loss in obese infertile woman results in improvement in reproductive outcome for all forms of fertility treatment, *Hum Reprod*, **13,** 1502-5 **(1998)**

12. Dew J.E., Don R.A., Hughaes G.J., Johnson T.C., Steigrad S.J., The influence of advanced age on the outcome of assisted reproduction, J. *Assist Reprod Genet*, **15**, 210-4 **(1998)**

13. Nachtigall R.D., International disparities in accesst infertility services, *Fertil Steril*, **85**, 871-5 **(2006)**

14. Rutstein S.O. and Shah I.H. Infecundity, infertility, and childlessness in developing countries. In, DHS comparative reports, Calverton, MD, ORC Macro and the world health Organization **(2004)**

15. Nestler J.E., Clore J.N. and Blackard W.G., The central role of obesity in the pathogenesis of polycystic ovary syndrome, *Am J Obstet Gynecol*, **161**, 1095-7 **(1989)**

16. Pasquali R., Patton L. and Gambineri A. Obesity and infertility, *Curr Opin Endocrinol Diabetes Obes*, **14**, 482-7 **(2007)**

17. Menken J., Trussell J., Larsen U., Age and infertility, *Science*, **233**, 1389-94 **(1986)**

18. Templton A., Infertility-epidemiology, aetiology and effective management, HealthBull, **53,** 294-8 **(1995)**

19. ESHRE Capri workshop, Social determinants and human reproduction, *Hum Reprod*, **16,**1518-26 **(2001)**

20. Zenzes M.T., Smoking and reproduction, gene damage to human gametes and embryos, *Hum Reprod Update*, **6,**122-31 **(2000)**

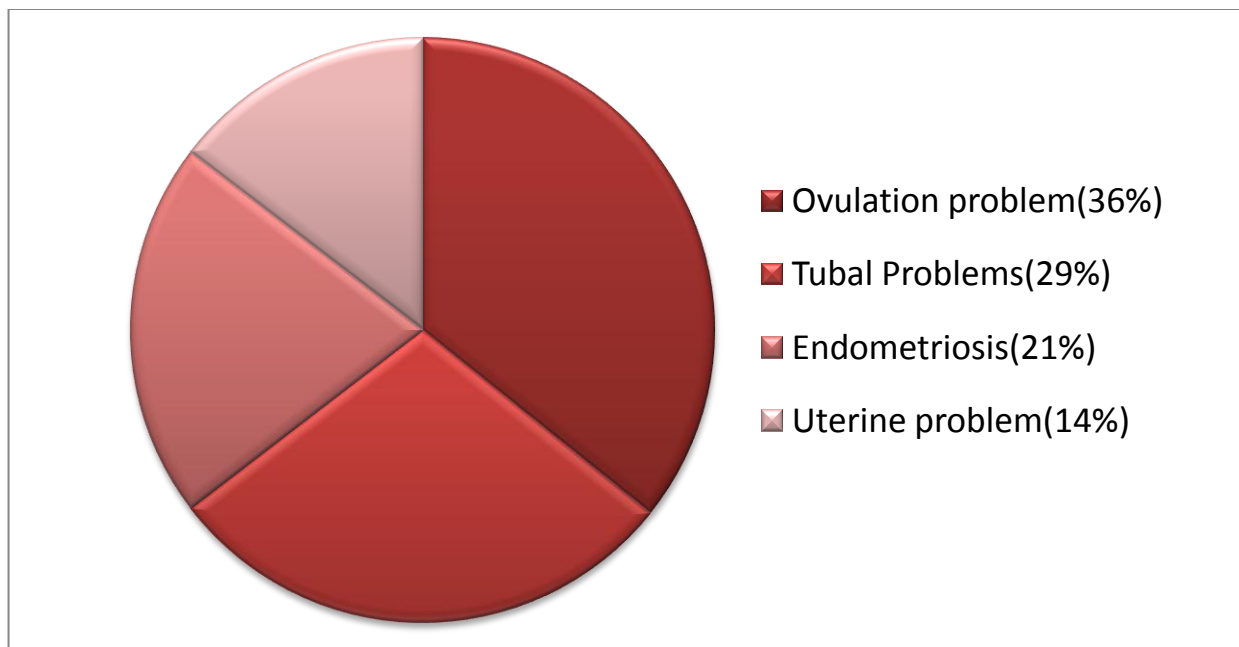21. Dorfman S.F., Tobacco and fertility, our responsibilities, *Fertil Steril*, **89**, 502-4 **(2008)**

Figure- 1
Female factors
Cause of infertility in females(n=302)
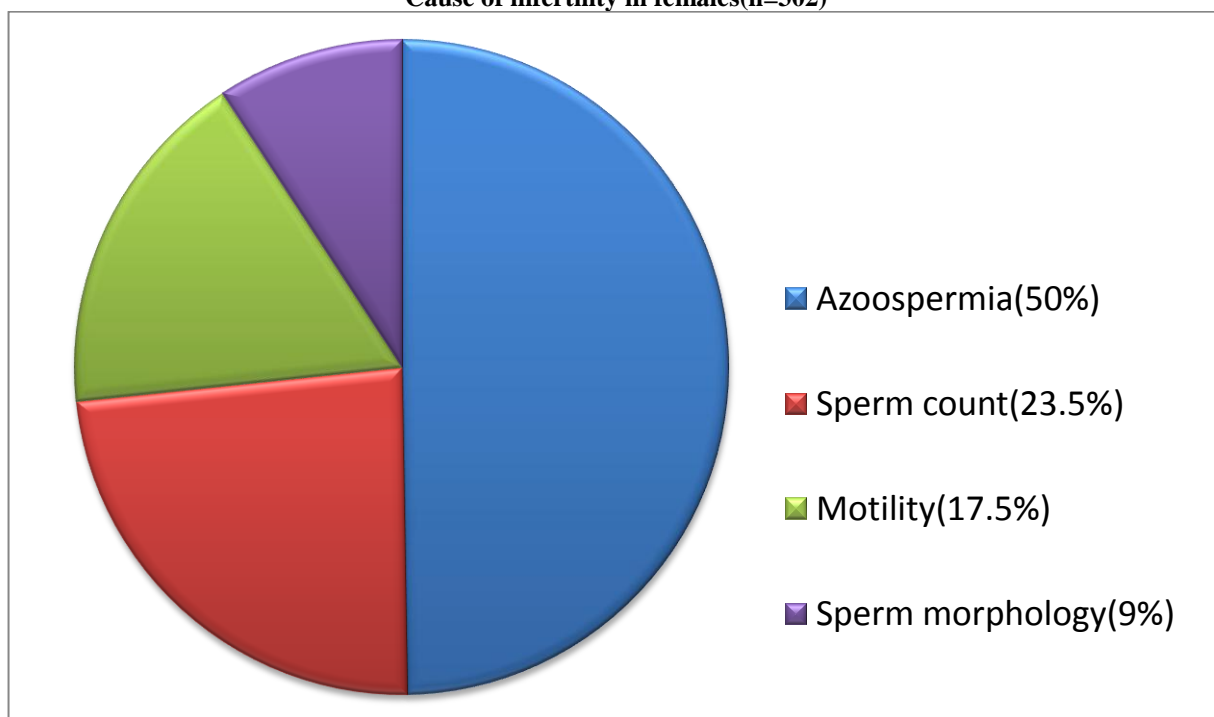

Figure-2
Male factors
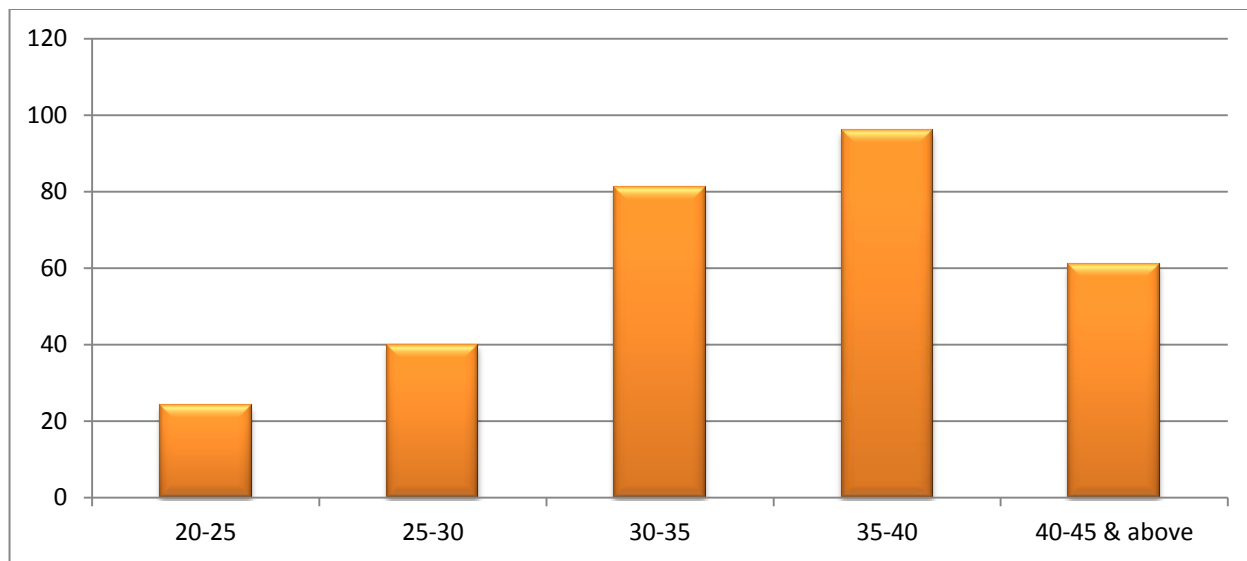**Cause of infertility in males(n=195)**

Figure-3
Age group based division of infertile female patients and 04 indicates age distribution among the female and male infertile cases respectively. As indicated in the table in both female and male the cases of infertility increases up to the age of 40 years.
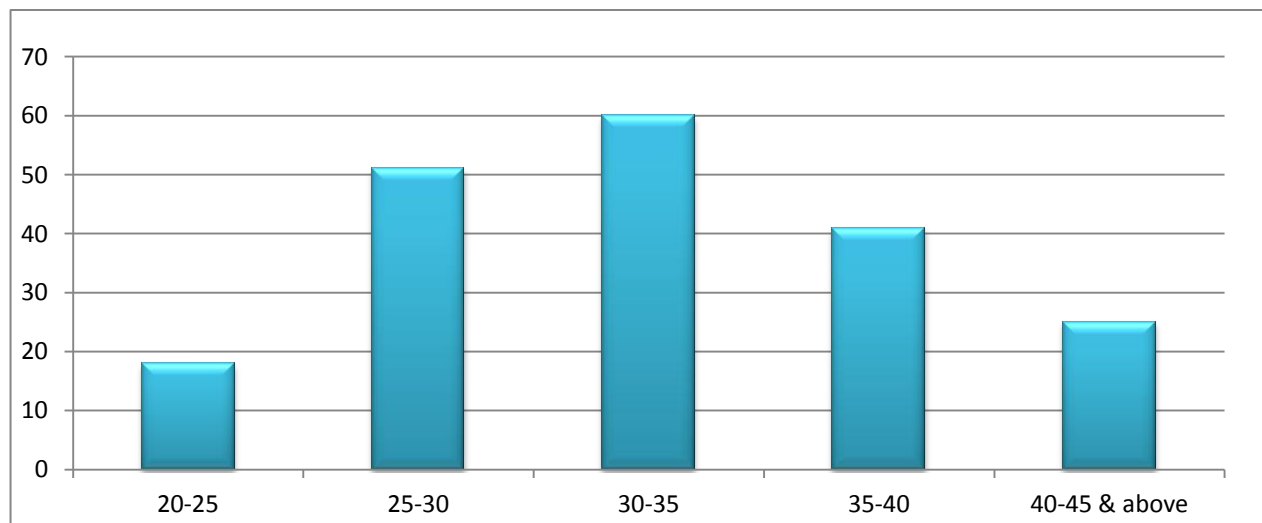

Fig-4
Age group based division of infertile male patients

Table-2
Occupations based division of infertile male patients

S.No.	Occupations	No. of patients	%
1	Group I – Academicians, advocates, accountants, bank workers	381	38.1
2	Group II – Farmers	176	17.6
3	Group III – General store, Kirana marchants	127	12.7
4	Group IV – Cloth and garment businessmen	85	8.5
5	Group V – Labours, drivers	74	7.4
6	Group VI – Others (chemists, sanitation, furniture shop, showroom workers)	157	15.7