



Obstetrics & Gynaecology

STUDY OF INCIDENCE AND PREVALENCE OF FEMALE INFERTILITY IN TERTIARY CARE CENTRE, JHANSI WITH SPECIAL REFERENCE TO THE ROLE OF ITS DIAGNOSTIC MODALITIES AND TREATMENT

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ABSTRACT **Background:** Every problem has a solution or at least prevention. On her posting in the clinic, as the investigator we observed that most of the women attending hospital had severe stress. Early detection or at least prevention of its modifiable factors can contribute to some degree to the reduction of this stress. We did our most possible effort to find out the reason behind the occurrence of infertility in the area of Bundelkhand and make every possible effort to diagnosed and treat the cause, as an attempt to find contributing factors, diagnosis and to treat the cause of infertility this study was taken up.

Aim and Objectives: To find out the prevalence of female infertile patients, various diagnostic modalities used in diagnosing female infertility, relevant possible treatment for female infertility and the outcome of female infertility treated by us.

Materials and methods: The longitudinal study was conducted on 250 infertile women of 18 to 40 yrs of age who was attending in the OPD of department of Obstetrics and Gynaecology, Maharani Laxmi Bai Medical College, Jhansi in association of Department of Radiology over a period of 18 months April 2019 to Sep 2020. The indicators used in the study was divided into predictor and outcome variables. The predictor variables was mainly socioeconomic characteristics of women. Other predictor variables was symptoms of RTIs, STIs, and menstruation-related problems. The outcome variables was primarily ever experienced primary, secondary and current infertility, infertility treatment and mean children ever born (MCEB)

Result: The study was conducted at tertiary care centre Jhansi Bundelkhand and out of 200 couples of infertility. 72% had primary infertility; 67.5%, due to female factor; 18%. Male factor and 6% are with mixed factor. Anovulation was found to be the major cause and PCOD was the leading cause of anovulation. 2nd leading cause of infertility was found to be tubal factor. Out of total 200 infertility couples; 118 female conceived giving rise to pregnancy rate per patient is 59%.

Conclusion: This study had been done to know the cause and clinical pattern of infertility in married infertile couples in Bundelkhand. Our study has reported predominance of female factors as cause of female infertility but male factor also occurred for a significant number of cases. Related to the cultural realities of specific locations of Bundelkhand; where infertility is a pervasive and serious concern it should be addressed through health care programme.

KEYWORDS : Primary infertility, reproductive age group women, socioeconomic factors, urban population

INTRODUCTION

Reproduction is the gift of god to all living creations. God creates this world for all his living creations to reproduce and fill and flourish it. Fertility plays a vital role in women's life. Loss of this precious aspect indeed results in stress. Infertility is the inability to become pregnant even after 1 year of unprotected sex. Both man and women contribute to this threat. According to American society for reproductive medicine the prevalence of infertility is about 5.3 million among the Americans.

Childlessness is around 2.5% in India.

Infertility is becoming more and more social issue in today's world. Being a problem which exist from the past its magnitude is increasing day by day. Almost 7% of the couple every year at reproductive age group reported that they had not used any contraceptives for more than 12 months and yet not become pregnant. Obesity and life style modification have contributed a lot to this.

World fertility survey and other estimated rates of infertility in South Asia, suggest and infertility rate of approximately 8% in India, 10% in Pakistan, 11% in Sri Lanka and 12% in Nepal^[1].

India is a country with billion plus population and every minute a child is born but statistics shows that **childlessness is around 2.5% in India.**

AIM AND OBJECTIVES

- To find out the prevalence of female infertile patients in study area.
- To study the various diagnostic modalities used in diagnosing female infertility.
- To find out the relevant possible treatment for female infertility.
- To find the outcome of female infertility treated by us.

MATERIAL AND METHODS:

The longitudinal study was conducted on 250 infertile women of 18 to

40 yrs of age who was attending in the OPD of department of Obstetrics and Gynaecology, Maharani Laxmi Bai Medical College, Jhansi in association of Department of Radiology over a period of 18 months April 2019 to Sep 2020. The indicators used in the study was divided into predictor and outcome variables. The predictor variables was mainly socioeconomic characteristics of women. Other predictor variables was symptoms of RTIs, STIs, and menstruation-related problems. The outcome variables was primarily ever experienced primary, secondary and current infertility, infertility treatment and mean children ever born (MCEB)

Definition of Infertility:

Infertility is the inability of a couple to achieve conception or to bring a pregnancy to term after a year or more of regular unprotected intercourse.

INCLUSION CRITERIA:

- Women aged between 20-40 years
- Women with primary infertility.
- Women with secondary infertility

Major factors causing infertility are:

- Male factor = 35%
- Urinary factor = 5%
- Ovarian factors = 20%
- Endometriosis = 10%
- Tubal factor = 20%
- Unexplained = 10%

EXCLUSION CRITERIA:

- Age less than 20 years or more than 40 years.
- HIV positive patient

All subjects was approved by the Human Subjects Ethics Committee of Maharani Laxmi Bai Medical College, Jhansi. Informed and written

consent should be taken from patient in consent form.

The data was analysed using SPSS-25 (Statistical Package for Social Sciences) statistical analysis software. For quantitative data - Paired T test 41) applied and for qualitative data - Chi square test applied.

Management:

- Couples counseling and life style changes according to diagnosis
- Ovulation induction with natural method
- Ovulation induction with IUI

RESULT

Table 1: Menstrual cycle (in days)

Menstrual cycle (in days)	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
<28 days	50	25.0%	23	11.5%
28 days	90	45.0%	29	14.5%
35-45 days	50	25.0%	60	30%
>45 days	10	5.0%	6	3%

Table 2: Duration of infertility

Duration of infertility (in years)	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
1-3 year	137	68.5%	88	44.0%
4-6 year	38	19.0%	20	10.0%
7-9 year	24	12.0%	09	4.5%
≥10 years	01	0.5%	01	0.5%

Table 3: History of STD/ TB/ PID

History of STD/ TB/ PID	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
STD	06	3.0%	05	2.5%
TB	46	23.0%	24	12.0%
PID	16	8.0%	18	9.0%
Normal	132	66.0%	71	35.5%

Table 4: USG Finding

USG Finding	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
Fibroid	12	6.0%	05	2.5%
Hydrosalpinx	04	2.0%	01	0.5%
PCOD	84	42.0%	40	20.0%
Peritubal adhesion	04	2.0%	01	0.5%
TO MASS	15	7.5%	07	3.5%
Within normal limit	81	40.5%	64	32.0%

Table 5: HSG Finding

HSG Finding	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
No spill seen	12	6.0%	05	2.5%
U/I Spill seen	48	24.0%	21	10.5%
Within normal limit	140	70.0%	92	46.0%

Table 6: Hormonal assay

Hormonal assay	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
Normal	158	79.00%	87	43.5%
Prolactin increased	16	8.0%	11	5.5%
Hypothyroid TSH (increased)	6	3.0%	6	3.0%
Hyperthyroid TSH (decreased)	2	1.0%	1	0.5%
LH	10	5.0%	7	3.5%
FSH	8	4.0%	6	3.0%

Table 7: Type of infertility

Type of infertility	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
Primary	144	72.0%	76	38.0%
Secondary	56	28.0%	42	21.0%

Table 8: Cause of infertility

Cause of infertility	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
Anovulation	61	30.5%	35	17.5%
Endometriosis	10	5.0%	08	4.0%
Male factor	36	18.0%	26	13.0%
Cervical mucus factor	06	3.0%	02	1.0%
Ovarian cyst	11	5.5%	06	3.0%
Sexual dysfunction	04	2.0%	02	1.0%
Tubal	47	23.5%	27	13.5%
Unexplained	13	6.5%	09	4.5%
Mixed factor	12	6.0%	3	1.5%

Table 9: Treatment

Treatment	Cases		Cases who conceived out of total cases	
	Number	Percentage	Number	Percentage
Hydrotubation	41	20.5%	22	11.0%
Medication	71	35.5%	50	25.0%
Ovulation induction and follicular monitoring	48	24.0%	30	15.0%
IUI	10	5.0%	6	3.0%
Surgical (diagnostic laparoscopy)	19	9.5%	10	5.0%
Referred for in Vitro fertilization	11	5.5%	0	0.0%

Table 10: Outcome (Conceive)

Outcome (Conceive)	Number of patients	Percentage
Yes	118	59.0%
No	67	33.5%
Lost of follow up	15	7.5%

DISCUSSION

Women are always appreciated for all what they are through ages, one of the reasons behind this greatness and uniqueness in women is their motherhood. A women is complete when she attains her pregnancy.

Our country always, has a custom which respects mothers a lot. Even we celebrate a day for mothers. But, where is this happiness in life of an infertile women. To procreate is a gift, but it is not given to all at times. A women's age is probably the most significant factor related to her ability to conceive. In addition to age, there are number of conditions that can interfere with a women's infertility.

This study was an attempt to incidence and prevalence of infertility in females and to identify common factors contributing towards infertility as well as the possible treatment and outcome.

This chapter deals with a detailed discussion on the study findings interpreted from the statistical analysis. The findings are discussed in relation to the objectives of the study.

The socio-demographic characteristics of the clients attending infertility clinic are depicted in table 1 and 2. It was observed that higher proportion of women with infertility (84%) were within the age group of 20-30 years of age. More than half of them (55%) had educated up to undergraduate. Majority of the women are Hindus (83%). The socio demographic data of the respondents reveal that infertility is more prevalent among middle aged women.

First objective of the study was to identify prevalence of infertility in tertiary care centre Jhansi:

In our study from the data taken up by hospital (Maharani Laxmi Bai Medical College, Jhansi) OPD and admission records; the overall prevalence of primary infertility among reproductive age group women was 8.9% in large population survey by Boivin et al^[2]; the prevalence rate of primary infertility ranged from 3.5% to 16.7 and in more developed countries and 6.9% to 9.3% in less developed nations with an estimated in less developed nations with an estimated overall median prevalence of 9% another study done by Adamson et al^[3] from south India found the prevalence of primary infertility of 12.6% similar prevalence was also found in study from Kashmir region. Kumar et al^[4] investigated extensive infertility problem in reproductive aged women from khairwar to non khairwar tribes in rural area of central India.

The total prevalence of primary infertility in study population was 14.2%.

Thus, the prevalence of primary infertility varies not only between countries but also within country.

Second objective of the study was to identify the risk factors associated with infertility:

The menstrual and marital history of the women which serve as some of the gynaecological factors associated with infertility are interpreted in tables no 6 and 7. It reveals that more than half of the women with infertility (45%) have a menstrual cycle once in 35-45 days. Women who had an irregular menstrual cycle were always at a risk of developing infertility to a certain extent. Also a higher proportion of them (44%) have flow days of 4-7 days and also associated with dysmenorrhea it also shows that a higher proportion of women with infertility (78%) had been married at the ages between 18 to 23 years majority of them had a non consanguineous marriage also that a higher proportion (69%) have a marital life of about 1 to 3 years.

It was also depicted from the interpretation that majority of women had sexual intercourse only once a week. Once a week is a very less sexual activity for a good fertility activity to occur. Also some women may miss out their fertile period, which also may contribute to infertility. It was interpreted that majority (46%) of the women were overweight and the diagnosed cause of most of them was PCOD. Also among the women with hormonal imbalance majority of them (8%) had an increased level of serum prolactin levels.

Adam son et al^[1], in their study on the prevalence and correlated of primary infertility among young women in Mysore, India, found that mean age of women with infertility was 25.9±3.12 year similar to our study where maximum number of infertile women are in age group 20-30 years (84%). The result are similar to the study by Adamson et al^[1].

There were 6 factors responsible for infertility with statistical significance as advanced age, elevated body mass index, age of onset of sexual activity, history of PID or tuberculosis and irregular menstrual history. It can hence be discussed in the context of the study variable that infertility is multidimensional in its occurrence. There are a number of risk factors which contribute either directly or indirectly to infertility. The investigator has identified some important factors which are related to infertility in our current scenario.

The third objective of the study was to associate each individual risk factor with infertility:

It was observed that many factors were interrelated with infertility. Commonly identified were that women with irregular menstrual cycle (75%), women who are diagnosed with PCOD (42%), women with increased serum prolactin levels (8%) etc, were also having infertility.

Irregular menstrual cycle which usually stays unidentified and untreated. Obesity has always contribute to infertility from ages. One of the reason behind this is that excessive fat alters the normal hormonal levels need for the ovulation, thus ending in alterations in ovulation pattern. Ultimately infertility set in.

It was reported that in cases of hyperandrogenemic oligomenorrhea, specially the polycystic ovarian syndrome future fertility is reduced but may be improved by preventive measures and therapy in adolescence. The investigator in this study has identified that there existed a significant association between factors as obesity, PCOD, increased serum prolactin levels, irregular menstrual cycles decreased sexual activity and infertility.

Yet infertility is a global health issue. Each individual risk factor is a solely related to infertility on its port to a certain degree.

The fourth objective of the study was to identify the causes of the infertility:

In our study it was observed that female factor was responsible in (69.5%) of the infertile couples, male factor observe in 18%, while in 6.5% no cause could be identified and combination of both male and female factors was seen in 6% cases in our study, while Monica et al^[5] from Sardar Patel Medical College, Bikaner, Rajasthan, India reported female factor 60.18% male factor 15.16%, while in 15.16% no cause could be identified and mixed factor in 9.41% cases.

A study done in Nigeria shows female related causes in infertility in 42.9%, male cause in 19.7% both partners contribute to 16.7% while no cause was found in 20.7% of patients.

The result of our study is almost similar to the study done by Monica et al^[5].

Several studied have demonstrated that the stress and anxiety had a negative effect on fertility. As the duration of infertility increase, the level of stress among women also increases leading to a vicious cycle.

The main findings of the current study were the high rate of primary infertility (72%) and high rated of female factors among infertile couples. The result of our study was similar to the study of Elsir A Elussein et al^[6] where 62.4% couples had primary infertility and 37.6% had secondary infertility.

In our study among the females factors the major causes are an ovulation (30.5%), endometriosis (5%), ovarian cyst (5.5%), cervical mucus factor (3%) and tubal factor was 23.5%. amongst the female factors an ovulation and tubal factor was the major cause. The tubal factor could be due to infectious diseases such as neisseria gonorrhoea Chlamydia trachomatis and history of tuberculosis also plays a major role.

The Fifth objective of our study was to identify the diagnostic approach and treatment modalities of infertility:

Counseling the infertile couple is an increasing part of practice today. It is important to investigate a couple as a unit and to establish a diagnosis sometimes nature needs to start pregnancy. Prevention and treatment could be an entry point for couple with infertility problem.

In the systematic review we present information relating to the effectiveness and safety of the following interventions; clomifene, drug induced ovarian suppression, gonadotrophin priming of oocytes before in vitro maturation; intra uterine insemination alone, or combined with gonadotrophins or clomifene; laparoscopic ablation of endometrial deposits, laparoscopic ovarian drilling and to some extent hydrotubation.

On the way to diagnostic approach there is positive family history of infertility in 17% cases and there is positive history of PID was found in 8% case and STD was in 3% cases positive history of tuberculosis plays a major role in leading cause of infertility. History of tuberculosis was found in 23% cases of infertility. Besides the history and examination ultrasound was done in which major cause associate fibroid (6%), hydrosalpinx (2%), peritubal adhesion (2%), tubo ovarian mass (7.5%) were the other findings.

Besides the USG on hysterosalpingography U/L spill seen in 24% and no spill seen in 6% cases. On hormonal assay major cases are with increased prolactin level (8%); 3% cases were with hypothyroidism, 1% with hyperthyroidism and abnormality of the gonadotropins was found about 9%.

Semen analysis was found deranged in 18% cases.

On the basis of type of infertility and various causes of infertility all the possible treatment modalities were offered to the infertile couples as well as proper counseling was done.

Hydrotubation was done in cases of tubal blockage. Medication followed by ovulation induction and follicular monitoring was done in cases of an ovulation. Proper medication and counseling was provided for male factor infertility.

Diagnostic laparoscopy was done in cases of adhesions, endometriosis or ovarian cysts. In utero insemination was also done in cases of cervical mucus factor leading to infertility. If in any case despite of all the treatment modalities conception was failed then that patients were referred the higher centre for IVF.

CONCLUSIONS

As a male or female partner or both can be responsible for infertility, so either partner should be counseled and investigated properly before proceeding to aggressive infertility treatments. The medical and socioeconomic support of infertile women like easier access to medical services. Broader social support and information are important requirements for resolving the problem. This study had been done to know the cause and clinical pattern of infertility in married

infertile couples in Bundelkhand.

Our study has reported predominance of female factors as cause of female infertility but male factor also occurred for a significant number of cases. Related to the cultural realities of specific locations of Bundelkhand; where infertility is a pervasive and serious concern it should be addressed through health care programme.

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