

# A RETROSPECTIVE STUDY ON PREVALENCE OF INFERTILITY IN WOMEN OF DELHI NATIONAL CAPITAL REGION

Hoda Q<sup>1\*</sup>, Kashyap S<sup>2</sup>, Askary F<sup>2</sup>, Niyaz A<sup>1</sup>

<sup>1</sup>Department of Pharmacy, Ram-Eesh Institute of Vocational & Technical Education, Greater Noida (UP), India

<sup>2</sup>ART center, Department of Obstetrics and Gynecology, AIIMS, New Delhi

## ABSTRACT

**Introduction:** According to WHO infertility is primary if there is failure of conception despite two years of cohabitation while it is secondary if a couple fails to conceive following a previous pregnancy, despite two years of cohabitation and exposure to pregnancy (in the absence of contraception, breastfeeding or postpartum amenorrhea). **Objective:** This study helps to evaluate the possible reasons of primary as well as secondary infertility in rural and urban areas of Delhi NCR, India. **Material & Method:** 521 women were screened and included in the study having history of either type of infertility. **Results and Discussion:** Amongst many valid reasons for infertility in women some new findings, although not significant, but may be a possible use of NSAIDs (5.56%) for one or other reason which may disturb normal ovulation cycle or process of ovulation. 7.86% women were suffering from PCOS, 52.19% women with case of tube blockage due to genital or other form of tuberculosis or Sexually Transmitted Infections, STIs. Hyperprolactinemia and hypothyroidism, which affected 34.35% females are some another factors for such a high incidence of infertility in this region. **Conclusion:** This study provides an insight view for major causes of infertility. Primary infertility with genital infection led tube blockage is one the leading factor for female infertility in Delhi NCR.

**Keywords:** Infertility, Hyperprolactinemia, AMH, Hypothyroidism, NSAIDs

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### Correspondence:

**Quaisul Hoda**

Assistant Professor, Department of Pharmacy, Ram-Eesh Institute of Vocational & Technical Education, Greater Noida (UP), India.

Phone: 9718842738

Email: [quaisulhoda@yahoo.co.in](mailto:quaisulhoda@yahoo.co.in)

## INTRODUCTION

According to World Health Organization (WHO) couples suffering from infertility have crossed 100 million mark.<sup>[1]</sup> Around 3 to 5 percent cases of infertility are due to unknown or unpreventable reasons. It has been observed that infertility is highest in regions where fertility rate is high.<sup>[2]</sup> Primary infertility is a condition when a woman of age between 15-49 years old is unable to get motherhood within two years of exposure to pregnancy (i.e. sexually active, non-contracepting and non-lactating) or the inability to carry a pregnancy to a live birth. Thus women whose pregnancy is not supported by her uterus and spontaneously miscarries, or who gives birth to a still born child, without ever having had a live birth would be considered with primarily infertility.<sup>[3]</sup> Secondary infertility is a condition when after her previous successful pregnancy and live child birth a woman is unable to bear a child, either due to the inability to become pregnant or the inability to carry a pregnancy to a live birth she would be classified as having secondary infertility.<sup>[3]</sup> Infertility of either type has become prevalent and is one of the most serious concerns in young ladies. Most infertile couples suffer from

primary infertility.<sup>[3]</sup> Several times the ill fate is due to problem in male partner like low sperm count, non motile sperm or failure of spermatogenesis. Stressful life and hypothalamic over activity which may cause prolactin level go high and problem in ovulation, High Thyroid Stimulating Hormone (TSH) and iodine deficiency leading to hypothyroidism and Poly Cystic Ovarian Syndrome (PCOS) which has been shown to cause difficulty in ovulation are the key factors for primary as well as secondary infertility in women.<sup>[12]</sup> One of the leading and preventable causes of infertility in developing countries is sexually transmitted infections (STIs).<sup>[4]</sup> Approximately 70 percent of all Pelvic Inflammatory Disease (PID) cases, which often results in fallopian tube damage, are caused by STIs.<sup>[5]</sup> In case of hypothyroidism, low thyroid hormone level interferes with ovulation process. Hypothyroidism can affect fertility due to anovulatory cycles, luteal phase defects, sex hormone imbalance and hyperprolactinemia. Hyperprolactinemia causes reduced FSH (Follicle Stimulating Hormone) levels.<sup>[13]</sup> About 15-20% females visiting infertility centers suffer from high prolactin level. It has also been observed that significant

percentage of women have been found to use one or another NSAIDs for their problems. Most of the women in that category using NSAIDs regularly were either arthritic or patients of one or other types of headache. NSAIDs inhibit COX-1 and COX-2 isoenzymes. It has been found that COX-2 is active in the ovaries during follicular development. Inhibition of COX-2 by NSAIDs is thought to develop an anovulatory condition characterized by clinical signs of ovulation but there is no follicular rupture and ovum release. Clinical studies have been confirming the induction of delayed follicular rupture or LUF in previously ovulating women by the administration of NSAIDs. PCOS is one of the leading causes of anovulation, amenorrhea and miscarriage.<sup>[13]</sup>

The data on the prevalence of primary infertility in India is very sparse and almost none from Delhi national capital region which includes many districts of U.P and Haryana.<sup>[6]</sup> The objectives of taking this retrospective study were to estimate the prevalence and describe the epidemiologic correlates of either type of infertility within a sample of sexually active women of reproductive age in Delhi NCR, North India.

### MATERIALS AND METHODS

#### Study population

A retrospective study was done with 521 screened infertile females, sexually active, in an IVF centre of a tertiary care hospital in Delhi NCR from February 2017 to April 2017. The study was approved by the Institutional Ethical Committee CP/2017/05 and was conducted after taking informed, written consent of the participants. All the screened patients had been visiting the centre regularly. The patients were asked for previous history like tuberculosis or other genital infections, abortion or miscarriage and contraceptive method like use of copper T or spermicidal jelly and drugs like steroids.

#### Inclusion criteria for screening of patients

Women should have age between 20 to 45 years and married for at least 2 years, sexually active (i.e. reporting unprotected vaginal intercourse at least once in the previous three months between day 12 to day 21 of the cycle), non-pregnant and ready to undergo some routine tests for possibility of infertility. Females on drugs like Eltroxin (25-150 microgram) or prolactin inhibitors dopamine or cabergoline are also included in the study as they are already confirmed cases of infertility. Hypothyroidism was considered at TSH levels of > 4.2 microIU/ml and hyperprolactinemia at PRL levels of >25 ng/ml.

#### Exclusion criteria for screening of infertile patients

Women bearing age below 20 and above 45 years old are excluded from the study. Smokers, alcoholics, and infertility due to male factor supported by semen analysis were also excluded from the study. The prescriptions and other reports of screened subjects were reviewed and discussed with the consulting gynecologist. Statistical analysis of results was carried out using percentages.

### RESULTS AND DISCUSSION

Of the 521 women screened for the study, significant number of females (52.19%) was diagnosed with unilateral or bilateral tubal blockage which might be due to genital TB infection or other STIs.<sup>[5]</sup> 140 infertile women (26.86%) had raised TSH levels while 94 infertile females (18%) had raised PRL levels only, and 179 infertile female (34.35%) have raised levels of both TSH and PRL. 41 females (7.86%) had polycystic ovarian syndrome (PCOS) that were under metformin therapy. Prescription of 29 infertile females (5.56%) was indicating use of NSAIDs for the problems of joint pain or headache of various types since long time.

Recently there is an increased surge in incidences of infertility in our society. Day by day numbers of cases are increasing in various infertility clinics. The causes for such a high rate are alarming and needed to be reviewed. Earlier only one or two causes were significant but in this study it has been found that more than three factors are alarming in causing infertility in women. Tube blockage is the leading cause followed by hypothyroidism and hyperprolactinemia. Polycystic ovarian syndrome (PCOS) and over use of NSAIDs are also visible reasons for infertility in women. Metformin has been successfully tried in combination with clomiphene citrate to induce ovulation as well as resuming regular menstrual cycle in cases of PCOS.<sup>[7]</sup> Several infertile females had in common severe inflammatory joint disease and chronic use of NSAID which gave an insight for possible reason for infertility.<sup>[8]</sup> NSAIDs block COX-1 and COX-2 enzyme which ultimately prevent the production of PGs which are essential mediators of ovulation. They induce the mobilization of granulosa and theca interna cells within the ovaries, and the COX-2 dependent PGs probably lead to the generation of proteolytic enzymes that rupture the follicles.<sup>[9]</sup> Both COX-1 and COX-2 are expressed in the uterine epithelium at different stages of early pregnancy and may be important in ovulation, fertilization and implantation of the ovum, as well as in angiogenesis for the establishment of the placenta (decidualization).<sup>[10,11]</sup>

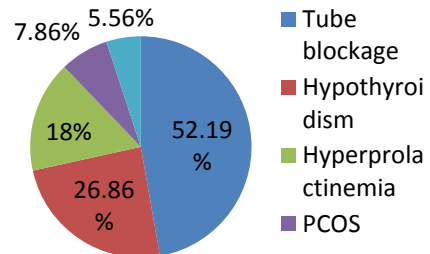


Figure1: Prevalence of primary infertility in females in reproductive age.

### CONCLUSION

After a retrospective survey for two months and exhaustive analysis of the collected data we conclude that patients with either primary or secondary infertility can be saved from extensive

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investigations like IUI or IVF processes if they are counseled properly and their early history being studied properly. Majority of the cases of infertility is primary. It has been found that pelvic or genital infection has caused more damage to the reproductive organs by damaging the tube. In such cases patients have no option other than IVF. Cases of hyperprolactinemia have been seen to be controlled with drugs like dopamine or cabergoline. Patients of hypothyroidism must be evaluated and treated appropriately before going for tedious process. Patients with rheumatological conditions and unexplained infertility should be asked about the use of NSAIDs because it may give an indication for infertility. PCOS is treated well with metformin and clomiphene citrate which induces ovulation process and regularizes menstruation in anovulatory females. When normal drug therapy or laparoscopic procedure doesn't respond then hormonal intervention or some sophisticated techniques like IUI or IVF may be followed. Our findings highlight the importance of infertility as a public health issue. Our data can be used to guide future reproductive health programme in India.

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### CONFLICT OF INTEREST

Authors have no conflict of interests.

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