

# The Etiology of Primary infertility in the Population of Kashmir Valley, India



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## Abstract

**Objective:** To study the etiology of primary infertility in the population of Kashmir Valley, India.

**Design:** A prospective study was undertaken of the couples who attended the clinic of the author over a period of 4 years, 2012 to 2016 for Consultation of Primary Infertility.

**Setting:** This was study done in a community hospital. All patients who attended our hospital for infertility over a period of 4 years. A NICE protocol was followed for the evaluation. Ethical committee permission was obtained for this study.

**Patient Population:** Couples married for at least 1 year and those who had regular unprotected sexual intercourse.

**Process of Study:** A longitudinal study protocol was followed to identify the cause of infertility.

**Results and outcome:** A predominant female factor was identified in 74% of the couples. Predominant male factor was identified in 7.8 % males and in all others, there was either a male as well as female factor or no male factor at all. Complete azoospermia was seen in 7.8% of the screened men and 18% showed some abnormality. Among females. 37.2% % showed evidence of anovulation (mostly Polycystic Ovary disease), 14.89% had hypothyroidism, 7% showed some sort of uterine abnormalities like malformed uterus, uterine septa or massive fibroids in uterus, and 6.3% of the patients showed tubal abnormalities.

**Conclusion:** Polycystic ovary disease, either unrecognized or untreated is most common cause of infertility followed by hypothyroidism and uterine issues. Tubal blockage is not the common etiology as seen in most of the western world. Male factor like azoospermia does occur and sperm abnormalities are a common cause in our setting but not the sole factor for subfertility.

**Keywords:** Infertility, Jammu and Kashmir, Polycystic Ovary disease, Azoospermia

## Introduction

Infertility is seen in all societies and all civilizations. There are popular stories of Kings who had no offspring and were ready to spend a fortune for having a child of their own. Modern societies have their own share of problems and also continue have the problem of infertility. The word infertility is used less nowadays, and it is replaced by subfertility which is more scientific in view of the fact that such couples invariably in vast majority of cases are able to conceive and have children. Jammu and Kashmir is a Union Territory in Republic of India. Previously it was self-administered Province comprising of three separate ethnic populations.

Kashmir division with predominant Kashmiri Muslims, Jammu division with predominant a Dogra Hindu population and Ladakh with Predominant Ladakhi Buddhist populations. Zarger et al. in his research from Kashmir reported that semen abnormalities were the commonest cause of infertility in Kashmir valley (22.4%), followed by anovulation in 17.2% followed by ovarian failure in 8.8% and hyperprolactinemia in 8.4%. They reported tubal disease in 7.2% of the infertile females [1]. This was a study based on experience of a tertiary care hospital experience and only complicated and resistant cases are treated in tertiary care

centers. Uzma et al [2], in 2015 reported that Jammu region had highest prevalence of infertility followed by Kashmir region and Ladakh region has at the least prevalence. We took up this study to report our experience in a community-based hospital in Kashmir region where patient report quite early to their primary Physician.

**Method**

We enrolled all the patients who visited the hospital for the primary complaint of Infertility. Nice guidelines [3]. were used to define infertility and all protocols were followed accordingly. Ethical Committee approval was obtained for this observational study from our hospital ethical committee. A woman of reproductive age who has not conceived after 1 year of unprotected vaginal sexual intercourse, in the absence of any known cause of infertility were registered and investigated. A detailed history was taken by one the authors and all baseline studies were ordered as per protocol. Patients were later seen and assessed by two senior authors. Gynecologist did a vaginal examination and review

the ultrasound of pelvis and hysterosalpingogram, wherever relevant. All hormonal analysis and other medical conditions and seminograms were assessed by primary author. Final diagnosis and management plans were done together by first and second authors, All semen analysis reports were classified as normal if they meet following WHO standards. (Table 1). Most of the cases of PCOD, hypothyroidism or hyperprolactinemia were treated at our hospital. Patients were referred to and seen by Gynecologist wherever required. Patients with Varicocele were referred to Urologist as and when needed. Hormonal treatment was offered to all patients with Hyperprolactinemia, Hypothyroidism and other related problem. Consultation was sought from an endocrinologist from a tertiary care center, wherever required. Patients were followed till they either conceived successfully or they were lost to follow up. Those who did not show up for follow-up, their last status of fertility was considered. We analyzed the data only for possible causes of infertility. Regarding the final outcome of treatment, the data will be published separately.

**Table 1:** WHO Criteria for a Normal sperm Standard.

Semen volume	1.5 ml or more
pH	7.2 or more
Sperm concentration	15 million spermatozoa per ml or more
Total sperm number	39 million spermatozoa per ejaculate or more
Total motility (percentage of progressive motility and non-progressive motility)	40% or more motile or 32% or more with progressive motility
Vitality	58% or more live spermatozoa
Sperm morphology (percentage of normal forms)	4% or more.

**Results**

We registered a total of 300 couples (600 Cases) starting from March 2012 till Jan 2016. Data was insufficient in some of the cases and only 282 couples (564 cases were analyzed in our study, 282 males and 282 females. Age range of our female patients was

from 20 to 38 with a median age of 31. Age range in males was 23 to 45 with a median age of 36. All the patients were ethnic Kashmiris, both men and women. We analyzed them separately. Data is presented in (Table 2), below.

**Table 2:** Depicting Causes of Male and female infertility in Our series.

Males	Males	Males	females	Females	Females
Condition	Number (n)=282	Percentage 100 %	Condition	Number n=282	Percentage 100%
Azoospermia	22	7.8	Polycystic Ovary Disease	105	37.23
Oligoastheniospermia	66	23.4	Hypothyroidism	42	11.89
Hypothyroidism	6	2.1	Hyperprolactinemia	11	3.9
Hyperprolactinemia	5	1.77	Primary Ovarian failure	21	7.44
Varicocele	-	-	Uterine abnormalities	20	7.09
Klinefelter Syndrome	3	1	Tubal Abnormalities	18	6.3
Total abnormal results	99	35	Total abnormal results	217	76.95

### Discussion

W.H.O has issued a protocol to evaluate a couple with subfertility and so have many other professional organizations like Gynecological societies and societies of Reproductive medicine. We followed a protocol issued by National Institute of Clinical Excellence (NICE), because it is more clinical and practice oriented. We tried to reach some diagnosis in each and every couple. Some of these couples had a condition in both husband as well as wife and some had none. So the sum total of the conditions is not necessarily the sum total for all couples. We tried to group women separately and men separately for the sole reason of better scientific description of each condition. In our study we found a good chunk of men with the issues of subfertility having Oligoastheniospermia- 31% of the men. We found a clear reason in only in 14 patients (16%) of the patients with sperm abnormalities. Although testicular biopsy was not done because most of the men refused to do it, but it seems that our Culture of using a fire pot during the winters and wearing tight clothes may be partly responsible for this [4]. Kashmir is the northern part of India and remains cold for 6 months of the year and has extreme cold for three months of December to February. People use heavy clothes and use fire pots that they usually keep very tightly held with their abdomen and sitting position just in front of their Genitalia. We had just 3 patients in our series who had a genetic reason for subfertility (Klinter's Syndrome). Regarding female subfertility, the spectrum of disease pathology was much wider than in men. A major chunk of our patients had an issue with Ovulation. These patients either had polycystic ovary disease or depression and obesity. PCOD diagnosis was established using standard protocols and were treated accordingly. Most of the patients with PCOD either did not know that they had PCOD or else they thought, it was not a big issue and will not interfere with fertility. Fortunately, a good number of these patients were treated and conceived later. Deshpande and Gupta [5] also reported that (PCOS) being the leading cause (46%) in cases of female primary infertility and that it was seen equally in lean and obese PCOS cases. Infectious causes such as pelvic inflammatory disease and tuberculosis were significantly associated with tubal factor infertility in their study. That was the experience of a Gynecologist from Mumbai. We did not have data of etiology of Tubal disorders in our cases because such patients were eventually followed by Gynecologists. Another common cause of subfertility was Hypothyroidism. For unknown reason hypothyroidism is quite common and we had a good number of them in our series. Surprisingly even a small dose of Thyroxine that corrected the hormonal imbalance has made a dramatic difference. Autoimmune thyroiditis had positive anti-TPO antibodies was seen frequently and they had an impact on fertility. Post viral thyroiditis is common but goitrous hypothyroidism is not that frequent, thanks to availability of Universal Iodized salt in India. Hyper prolactinoma either with hypothyroidism or without hypothyroidism was also seen and treated accordingly. Besides these fairly common disorders in our community, other rare causes of Infertility [6, 7] like Cushing syndrome, Addison's

syndrome, hyperthyroidism, Hypogonadotropic, hypogonadism or Hyper-gonadotropic condition or ovarian tumors etc. were not seen in our series. We believe that such patients invariably are being picked up early and referred to tertiary care centers for management. Similarly, a post-partum pan hypopituitarism (Sheehan's Syndrome), seen commonly in Kashmir valley especially in the past, were not seen in our series. These patients usually present with lactation failures and secondary infertility rather than primary infertility. Structural defects were seen in 7% of the females, these include septate uterus, uterine myomata and even cervical polyps. These structural defects are referred to gynecologists and had a very good favorable outcome. Premature Ovarian failure is another condition that we came across. There might be many reasons for this. We have seen this condition mostly in patients above the age of 30 years. Delaying marriage till 30 years is quite common these days. Reasons can be varied. Either academic careers for a women or social reasons of not getting a person of her own choice and even economic reason are important. Marriage in Kashmir costs a fortune and dowry is another issue that delays marriages. Sometime even, the girl has a boyfriend, and the family does not accept the relationship and that leads to delay of marriage till they lose healthy eggs. Autoimmune oophoritis is also common and we have seen patient as young as 22 years with premature ovarian failure. Surprisingly Tubal pathologies like tubal obstruction was not seen that commonly. We had total of 18 cases of tubal obstruction. Some of them had a prior ectopic tubal pregnancy that was treated surgically but others had different reasons. One of the reasons we think that tubal obstruction was uncommon was that premarital sex is not that common in our community. Even if a girl and a boy are friends but they will not get involved sexually. This is the reason that even pelvic inflammatory disease is uncommon in young unmarried girls. Similarly, gonorrhoea or abortion either spontaneous or induced, are not seen in unmarried couples. These might form important reason for secondary infertility but not in primary infertility.

### Conclusion

Female factors are responsible for more than 3/4th cases of primary infertility in Kashmir Valley. A vast majority of them have PCOD, followed by hypothyroidism and Primary Ovarian failure. Tubal obstruction and other structural diseases of uterus are other important causes for primary infertility in females. In men Azoospermia is seen in almost 8% of the patients but subtle abnormalities of semen are quite common- (24%) of infertile couples. These subtle abnormalities may not be sole cause of infertility but might be contributing to some delay in fertility. We believe that use of traditional fire pot (called Kangri) might be the reason for Oligoastheniospermia seen in these young men.

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