International Journal of
Science Inventions Today
www.ijsit.com
ISSN 2319-5436
Research Article

# A STUDY IN CAUSE OF FEMALE INFERTILITY IN HOSPITAL OF KAVRE DISTRICT

Prof. Lu Mei Song*, Ranju Baral Ghimire and Zhang Dan Dan

*Department of obstretics and gynecology, Harbin Medical University 1st affiliated hospital, Harbin, P.R China.*

## ABSTRACT

**Background and Purpose:** A study to identify the cause of infertility among women attending infertility clinic Satyasai hospital. Being able to reproduce plays a vital role in a woman's life. In our tradition fertility is the most important part of marital life. Loss of this precious aspect indeed results in stress. Infertility is defined as the inability to become pregnant even after one year of unprotected sex. Both men and women contribute to this threat. According to the American Society for Reproductive Medicine the prevalence of infertility is about 5.3 million among Americans, or 9% of the reproductive age population. The main purpose of this study is to identify the main factors to cause infertility which will enable clinician to treat patient effectively.

**Methods:** It was a descriptive study. The study was conducted in the infertility clinic at Satyasai hospital.107 women attending the infertility clinic were selected as the samples by systematic random sampling. The tool used for the study was Structured Interview Schedule and Document Schedule.

**Results:** This study identified certain modifiable factors contributing to infertility. There was a significant association between most of these factors and infertility. The study identified the major cause to be ovulatory cause. While there were various common phenomena affecting fertility like age, BMI, exposure to sexually transmitted disease, duration of trying to conceive, etc.

**Conclusions:** The study concluded that ovulatory cause was the most predominant.

**Key words:** Infertility； Artificial reproductive technique；PCOS

## INTRODUCTION

Infertility has been an emerging topic of great concern for all worldwide. Despite sophisticated diagnostic tools, its prevalence is in increasing fashion. The problem of infertility is not a life-threatening or any morbid [1]condition but it has been affecting 1 in every six couples leading to a psychosocial problem affecting the normal well-being of the patient. The prevalence of infertility is varied worldwide ranging from 3% to 7%, the majority being residents of developing countries [2]. Infertility is being a common global problem affecting one couple in six. Approximately 167 million ever-married women aged 15-49 years in developing countries were infertile. infertility rate of approximately 10%, 8% in India, 10% in Pakistan, 11% in Sri Lanka, 12% in Nepal, and 15% in Bangladesh.[3]The evidence for changes in the prevalence of infertility is difficult to establish. Infertility is defined as the inability of getting pregnant after trying for at least one year, with unprotected regular sexual activity[4]. Assisted reproduction includes all the methods used for fertilization, which is not achieved through natural sexual intercourse. Infertility also complicates marital dynamics, sometimes leading to marital instability, and occasionally divorce, polygamy, or remarriage. Because motherhood is considered a mandatory status, infertile women may be harassed and tormented. Infertility, as well as being a medical condition, has a social dimension; it is a poorly-controlled, chronic stressor with severe long-lasting negative social and psychological consequences[5]. Indeed, some people never want to have children. However, for most people that want children, infertility is devastating. Part of this is a sociological problem. In a developing country like Nepal, India Bangladesh, the suffering of infertility is a product of a pronatalist society, which values women largely for their ability to bear children. The prevalence of infertility is between 2 and 10 % of all women at reproductive age[6]. Fertility plays a vital role in a woman's life. In our tradition fertility is the most important part of marital life. The feeling of being conceived is wonderful.

Incidence of infertility has been risen to one couple in seven western worlds and one in four couples in developing countries who are having problems in conceiving.

However, the advancement in artificial reproductive treatment (ART) techniques and sophisticated labs has enabled the problem seeker with positive result. On the other hand, the facilities are limited to certain cities, so the people in fewer privileged areas are refrained from getting access. Moreover, the cost of the procedure and the repeated hospital visit has become a problem in working women or with low economic status. [7]Due to fast-moving careers, the advancing age of marriage, dependency on fast foods and lack of time for couples the rate of infertility is increasing dramatically.[8]

In China, a large-scale survey was conducted nationwide in 1988, reported that the prevalence of 2-year infertility was 6.7% among women of reproductive age. Prevalence of infertility is 6% in Nepal. [9]. The prevalence of infertility directly depends upon the cause[10] . Female reproductive organ is a complex system. For a woman to be able to conceive, apart from male factor being normal, the complex hormonal regulation mechanism from hypothallamus to pituitary to ovary has to be normal. There should be a balanced positive and negative feedback mechanism for cyclic hormone regulation. There are various factors that affect the

prevalence of infertility which can be categorized as Ovulatory cause, Tubal cause and Uterine or cervical causes or unknown.

With the advancement of new diagnostic tool and clinical competency of the clinician, diagnosis has made tremendous improvement. Hysteroscopy and laparascopic intervention has been a proven to be blessing in the diagnosis and treatment, there has been much development in reproductive medicine and ART. Also, there have been various upgraded treatment protocol [11]. IVF being the most effective treatment in patient who failed to get pregnant inspite of various ovulation induction drug, IUI or other treatment procedures. However this has been quite costly and difficult to asses for majority of the patient [11]. With a careful, thorough history, laboratory investigation, and radio-diagnostic tools, we can overcome this emerging problem. In the literature from various journals, it has been found that hormonal cause of infertility has been the most common cause of infertility [12]. However, the prevalence of idiopathic causes is still 10%. So, more research and study are needed to unravel the actual cause of infertility.In the present day, it is still an issue of huge research. Insipte of such an advanced option and millions of research, it still lacks uniformity and proper guideline. Because of a busy schedule, stressful life, and processed food, infertility still poses a greater threat in the treatment modality. The most common cause of infertility seems to be a hormonal cause which indeed is aggravated by our modern-day lifestyle however with proper meticulous work out in establishing the cause of infertility plays an essential role towards the treatment plan and leading to success in conceiving.

## Preface:

Infertility has been an emerging health issue in today's world. Today due to various reasons the number of infertile patients is in increasing order. Incidence of infertility has been risen to one couple in seven western worlds and one in four couples in developing countries who are having problems in conceiving.

However, the advancement in artificial reproductive treatment (ART) techniques and sophisticated labs has enabled the problem seeker with positive result. On the other hand, the facilities are limited to certain cities, so the people in fewer privileged areas are refrained from getting access. Moreover, the cost of the procedure and the repeated hospital visit has become a problem in working women or with low economic status. [7]Due to fast-moving careers, the advancing age of marriage, dependency on fast foods and lack of time for couples the rate of infertility is increasing dramatically.[8]

The prevalence of infertility is different in different countries. According to a recent study suggest that the rate of infertility ranges from 3.5 to 16.7% in high-resourced countries, and 6.9 to 9.3% in low-resourced countries[9].

In China, a large-scale survey was conducted nationwide in 1988, reported that the prevalence of 2-year infertility was 6.7% among women of reproductive age. Prevalence of infertility is 6% in Nepal. The prevalence of infertility directly depends upon the cause[10] . Female reproductive organ is a complex system. For a woman to be able to conceive, apart from male factor being normal, the complex hormonal regulation mechanism from hypothallamus to pituitary to ovary has to be normal. There should be a balanced positive and negative feedback mechanism for cyclic hormone regulation. There are various factors that affect the

prevalence of infertility which can be categorized as Ovulatory cause, Tubal cause and Uterine or cervical causes or unknown.

With the advancement of new diagnostic tool and clinical competency of the clinician, diagnosis has made tremendous improvement. Hysteroscopy and laparascopic intervention has been a proven to be blessing in the diagnosis and treatment, there has been much development in reproductive medicine and ART. Also, there have been various upgraded treatment protocol [11]. IVF being the most effective treatment in patient who failed to get pregnant inspite of various ovulation induction drug, IUI or other treatment procedures. However this has been quite costly and difficult to assess for majority of the patient [11]. With a careful, thorough history, laboratory investigation, and radio-diagnostic tools, we can overcome this emerging problem. In the literature from various journals, it has been found that hormonal cause of infertility has been the most common cause of infertility [12]. However, the prevalence of idiopathic causes is still 10%. So, more research and study are needed to unravel the actual cause of infertility.

## MATERIALS AND METHODS

### Materials and Methods:

The research is based on a small town Banepa of Kavre district,a small town in the outskirt of kathmandu valley. It only includes patient residing in this region only.

In our study, I considered 109, out of which 2 were discarded, patients seeking treatment in the infertility department of Satya Sai Hospital. I have been able to consider only 109 patients because of the unfavorable situation of Covid-19 and the short time frame. Women of 20 to 49 years age groups were included within four months duration. We gathered the patient's general information like name, age, sex, marital status, menstrual pattern and duration history, pregnancy history, medical or surgical history about past medication and ongoing treatment, etc. I collected the data by direct interview with the patient and followed the test they had. Follow up was carried out on personal basis from patient herself and via phone as required and when available. Patient were informed about the process and they had their consent. we compared the data so obtained and evaluate the most common cause of infertility.

Inclusion criteria: Female patient, age 20 – 49, Primary or secondary infertility.

Exclusion criteria: Male patient, Age <20 and >49, Patient with other systemic illness or cancer.

### Stastical Method:

This chapter deals with the analysis and interpretation of the data collected. The analysis is a method for rendering quantitative, meaningful, and providing intelligible information. So that the research problem can be studied and tested including the relationship between the variables. The data collected had been analyzed using appropriate statistical methods.

Data were entered in Microsoft Excel and transferred to SPSS 16 for analysis. Data were edited and coded prior to analysis. Categorical data were presented as frequency and percentages. Tables and diagrams were used for data presentation.

## RESULT

**Infertility rate among the patient visiting satya sai hospital**

**Total no of patient was 1267 over 4 months out of which 109 were for infertility that makes**

### Basic clinical data of infertile women:

The data collected from 107 patients were evaluated. The most common age group seeking infertility treatment were 20 -29, which is almost 50.5%. 30-39 were 36.4%. There were few seeking treatment above 40 which is 13%. (Table 1). Forty-three percent of the cases were of normal BMI followed by 30.8% of overweight cases and 17.8% of obese cases. About 9% of cases were underweight. (Fig 1)

| Age | Frequency | percentage |
|---|---|---|
| 20-29 | 54 | 50.5 |
| 30-39 | 39 | 36.4 |
| 40-49 | 14 | 13.1 |
| Total | 107 | 100 |

**Table 1:** Age-wise distribution

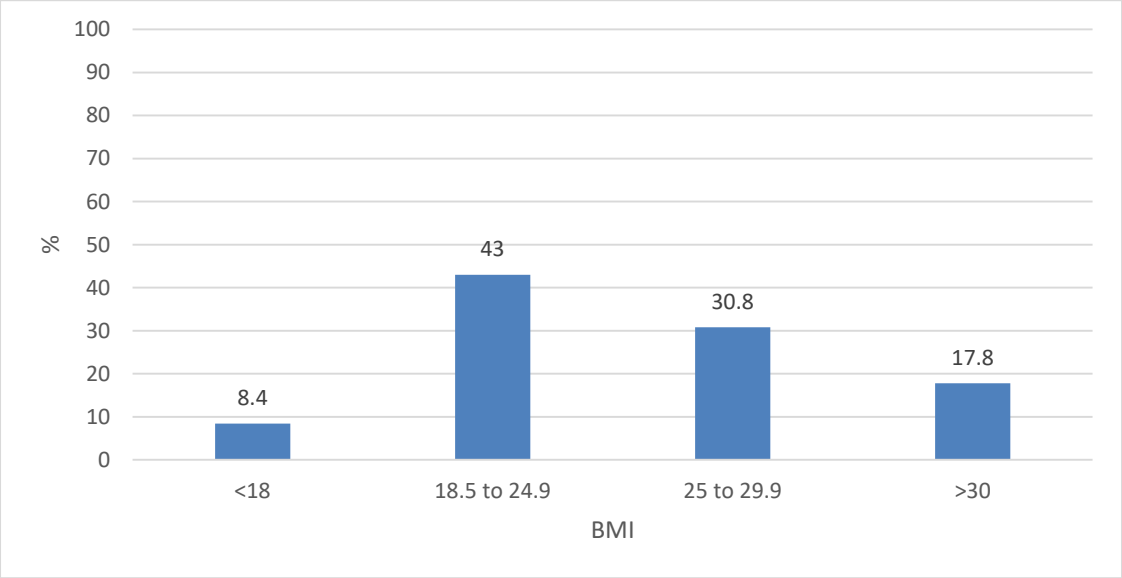


**Figure 1:** Patient seeking infertility service according to BMI

### Primary infertility was significantly higher than patients seeking medical service for the second pregnancy:

About 34% of cases had tried for more than a year followed by 32.7% who had been trying for 2-5 years. More than 50% of cases had not been pregnant. (Figure 2). About 25% of cases had 1 pregnancy followed by 22.4% with 2 pregnancies. Nearly 1% had 3 pregnancies. Primary infertility was significantly higher than patients seeking medical service for the second pregnancy. (Figure 3). Almost 43% had previous exposure to sexually transmitted diseases, while 43% had none. (Figure 4)

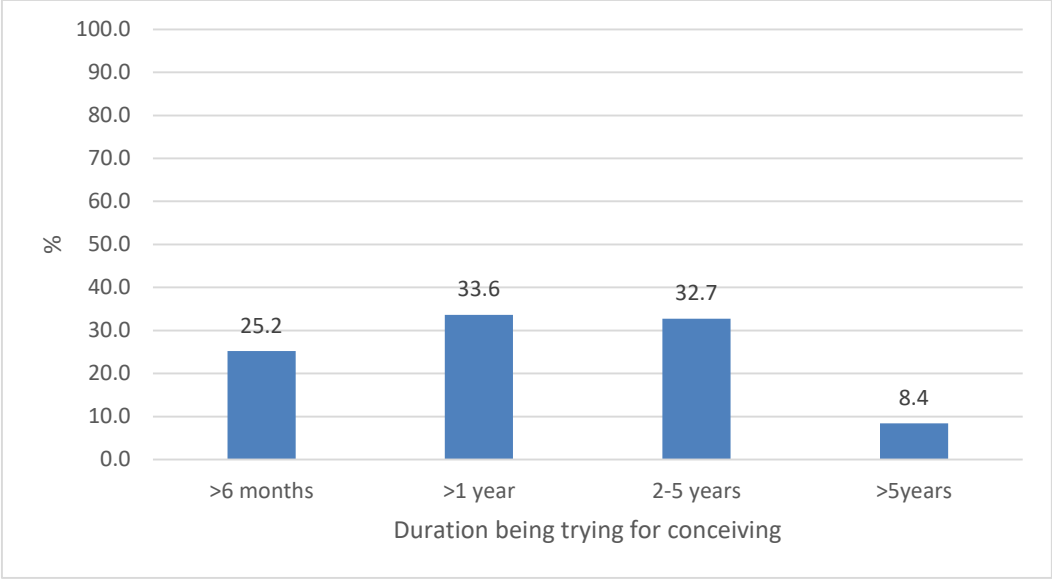


**Figure 2:** Periods patient have been trying to conceive

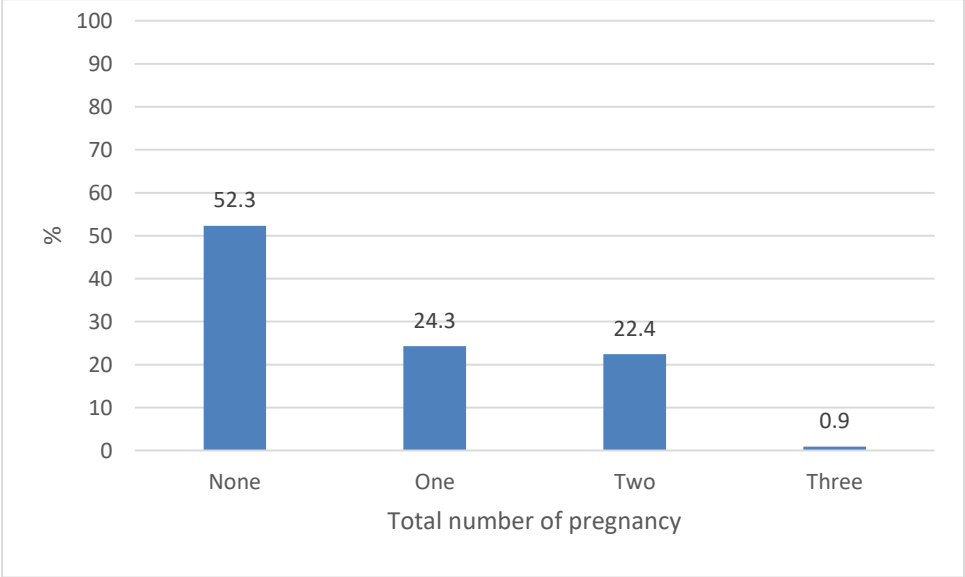


**Figure 3:** Total number of pregnancy full term or abortions

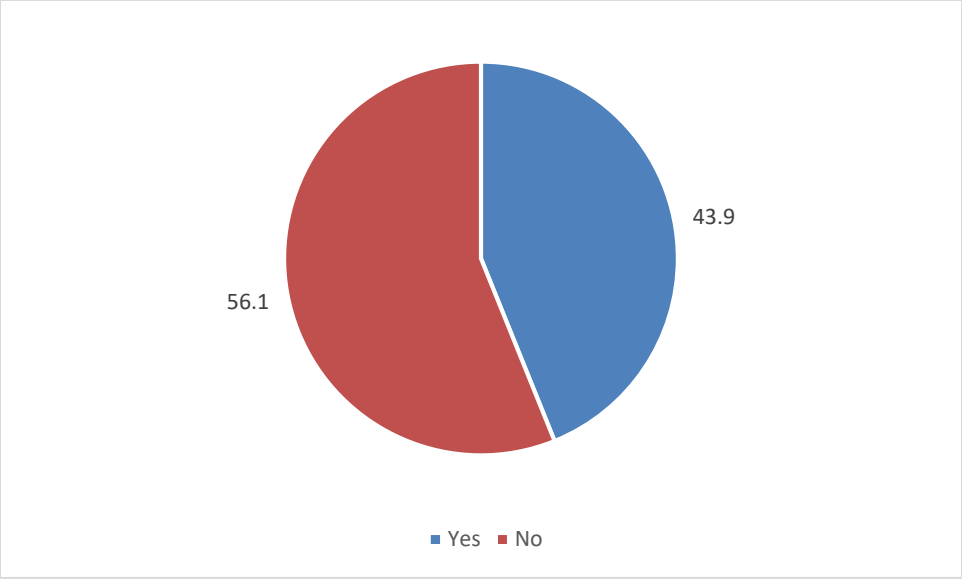


**Figure 4:** Total number of patients who had prior exposure to sexually transmitted disease

## Ovulatory cause was the major cause of infertility:

The major cause of infertility in my research was Ovulatory cause which accounts for almost 39.3% followed by uterine cause which is 33.6% and finally tubal pathology was 28 % and 17.8% were of unknown cause (Figure 5). In ovulatory cause, PCOS seems to be (14 %) the main factor, while, diminished ovarian reserve in 8.4% follow while aging and thyroid problem both seem to be (5.6%), POF in 3.7%, a \nd hormonal cause in 3.7%. about 2% of cases had genetic factors present (Figure 6). Endometriosis and pelvic inflammatory disease were equally present in 9.3% of cases each. Previous ectopic pregnancy was present in 4.75 cases. Pelvic abscess and salpingectomy were seen in 1.9% of cases each. About 1% of cases had tubal surgery (Figure 7). About 10% of cases had adenomyosis followed by infection (7.5%), fibroids 4.7%), uterine anomalies (3.7%). Few cases had cervicitis, bicornuate uterus, congenital anomalies, and tumor. Nearly 3% of cases had other causes (Figure 8).

In my result, there were cases where the overlapping of the disease was seen. Some patients had more than one cause (15%) had both the cause in combined form. Our study had various limitations. Firstly because of covid-19 pandemic life was so uncertain for any prediction. Secondly there was very low patient flow in the hospital because of fear of covid. Many people also tried to hide the facts or refrain from giving the exact data. Follow up was very difficult because many patients lived in village area where communication was a problem.

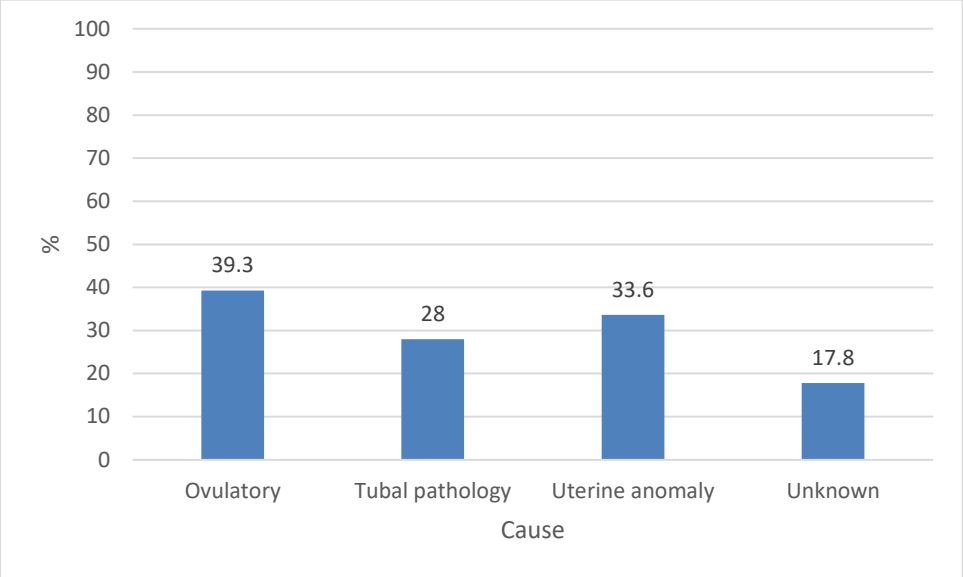


**Figure 5:** Major cause of infertility in patient visiting in infertility clinic

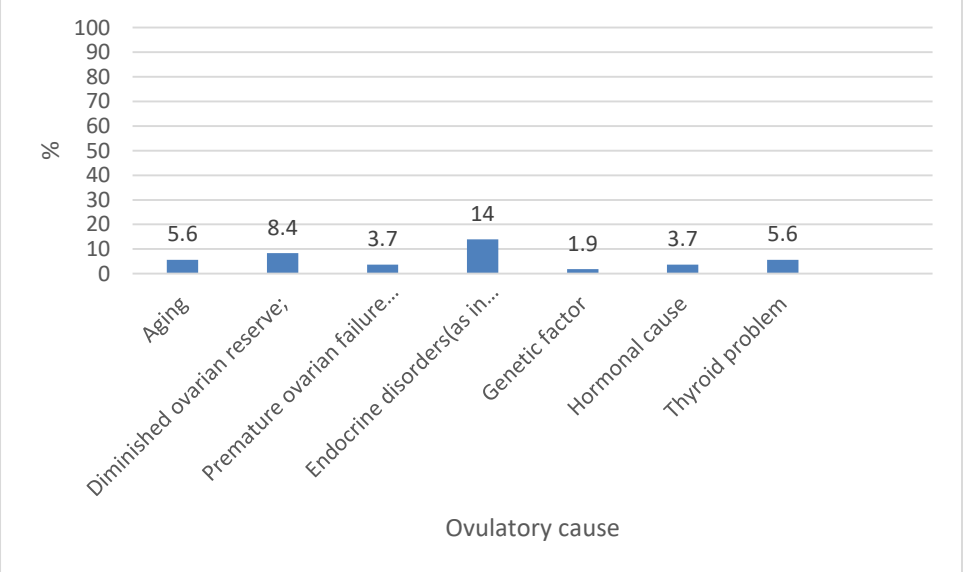


**Figure 6:** Ovulatory causes

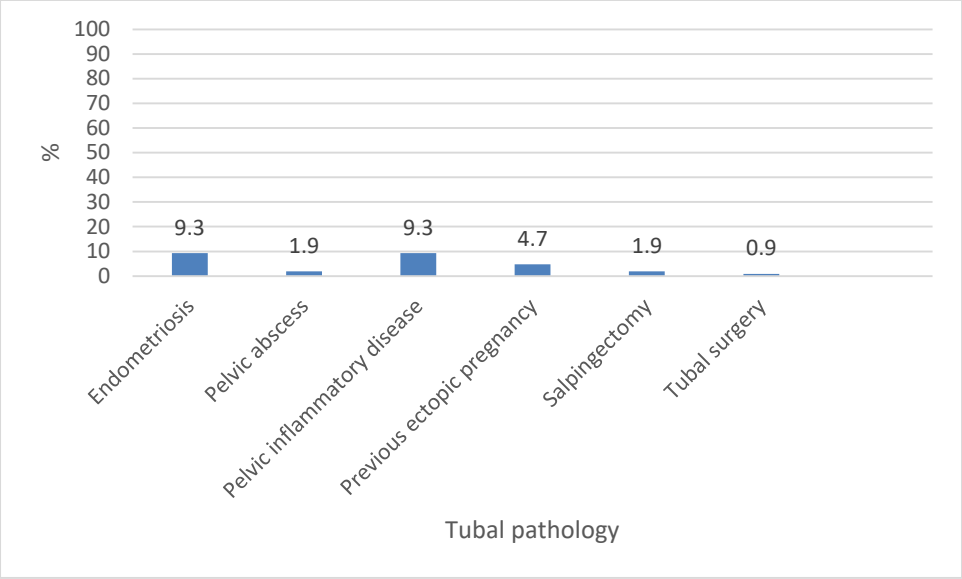


**Figure 7:** Various pathology involved in tubal infertility

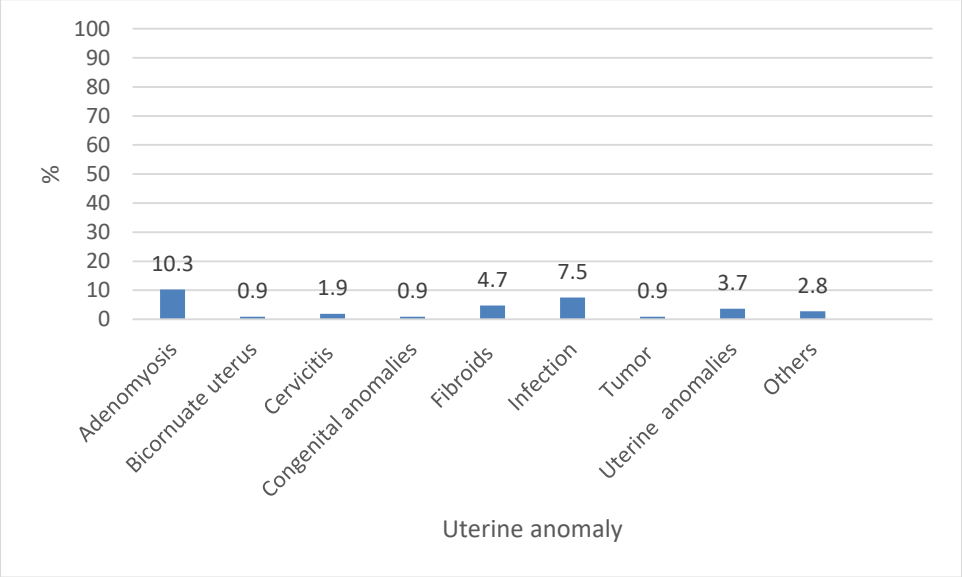


**Figure 8:** Various pathology related to uterine or cervical cause of infertility

## DISCUSSION

Infertility has been major health issue, the exact prevalence, and cause of infertility are still not clear. Many couples still refrain from seeking help from the clinician.though not a disease has agreater impact in the life of individual . In a study done by SR Tamrakar et al. Parameters such as age, obstetrical history, smoking and drinking habits, menstruation, body mass index (BMI), lifestyle, and environmental factors were also considered to play a greater role in causing infertility.In my study increasing age of female, obesity,years of trying, seem to have impact on infertility.Age has been so far become an important factor in infertility.in current

study most female seeking infertility treatment were found to be more than 29 years of age.Similarly a study conducted by F.J.Broekmans1 et al stated that fertility starts to decline with age.According to a study from the European Society of Human Reproduction and Embryology (ESHRE) in 2007, the overall prevalence of Primary infertility (57.5%) was more prevalent than secondary infertility (42.5%). The survey of National Family Health confirmed that the prevalence of primary infertility is consistently more than secondary infertility in urban areas.in current study also primary infertility seekers were more than the secondary infertility. The fertility decline in female already starts around 25-30 years of age and the median age at last birth is 40-41 years in most studied populations experiencing natural fertility.From various studies it has been found that in african countries and south asian region ,the cause of infertility is different.A study by Mittal *et al*. in Haryana Female factor accounted for 46.6% of the cases of which Polycystic ovarian disease (PCOS) being the leading cause of infertility. while a study conducted in Sub-Sahara Africa was found to be as low as (33%). In a study by U.Larsen et. al, in Africa tubal factor infertility, was predominant followed by ovulation defect. In Africa, a majority suffered from tubal factor infertility, ovulation defects were also prevalent.[13].African countries seemed to have a higher risk of sexually transmitting disease which ultimately leads to scarring and blockage of the tube. so the tubal factor seems to be the major cause in African countries. However, the most common cause, almost half being (52.12%) the ovulatory cause followed by adnexal pathology (20.3%), tubal pathology (15.53%), thyroid abnormality (13.6%), uterine causes (8.8%), endometriosis (9.7%), hyperprolactinemia (6.89%) and PCOS (5.1%).[14].Most common cause of infertility was found to be ovulatory problem in my study.

Endometriosis is also recently studied disease which has been causing infertility among young patients. which accounts for 7–10% of women and is associated with pain and infertility[15]Apart from the individual age of the female and male partners, the age of marriage also influences the cause of infertility. According to study by Priyanka et, (PMC6937760/), in couples married for<5 years, PCOS and tubal causes related to sexually transmitted infections were more commonly found, whereas, in couples married for >5 years, the proportion of unexplained infertility. This can be correlated to the increasing age of both the partners leading to a reduction in the quality and quantity of both ova and sperms. Unexplained infertility is a diagnosis of exclusion after evaluation of the male and female factors which fails to identify a specific cause for infertility.According to study by Sharma et al., IJPSR, 2011; Vol. 2(1): 1-12,says that unexplained infertility is not about unknown cause but proper diagnostic tools or tests should be explored. The incidence of unexplained infertility is quoted to be around 30%. In my study it is 17%. Adenomyosis is also getting common in young females wanting to conceive for the second time. previous ectopic tubal blockage, anatomical alterations are also some factors that affect fertility. Apart from the various clinical diagnosis, the psychological aspect seems to be affecting almost every patient seeking fertility treatment, However, it can only be predicted as we don't have a proper tool for the measurement and patients are usually reluctant to share.

## CONCLUSION

Infertility has been uprising problem affecting the life of a female and her family.The most common cause of infertility in my research was found to be Ovulatory cause which accounts for almost 39.3% followed by uterine cause which is 33.6% and finally tubal pathology, while17.8% were of unknown cause.The general health issues like BMI, Age, duration to marriage or prior exposure to sexual and other diseases have been seemed to make an impact in the case of female infertility.Primary infertility is more commmonly seen that the secondary infertility. Among the major cause of ovulatory problem, PCOS, diminished ovarian reserve, aging, thyroid problem were commonly seen.Among tubal cause,endometrosis,pelvic inflammatory disease,previous ectopic,salphingectomy etc has been leading cause, while adenomyosis,infection,fibroid,uterine anamoly,etc have been associated with uterine or cervical cause.However during interview patient seemed to have undergone much psychological stress but there is no parameter to measure the extent.

Thus more studies and a proper guideline should be followed in the assessment of the infertility.Also some diagnosis might have been missed due to lack of diagnostic tool or the cost of it.So much research is needed with regular follow up of patient.

## Acknowledgement:

Firstly, I would like to thank my supervisor, Professor Lu Mei Song, Head of Department of Gynecology department of 1st affiliated hospital of Harbin medical university, Harbin, China. Her support and expert guidance throughout my master's degree course has made me more confident and independent. I am heartily thankful for her inspiring direction, invaluable constructive criticism, friendly advice, continued encouragement, and assessment in each step of the study according to recent updated protocols and guidelines. Secondly, I am heartily thankful to my teacher Zhang Dan Dan, whose encouragement, and always ready to help and care for my comfort, and always ready to listen when I had any problem. I am obliged for the help she has offered me. I am thankful for Dr Li Meng, who has been helping me to understand infertility in detail. Allowing me to continuously follow her and translating the clinical procedures.I am thankful for the whole satya sai hospital team for their invaluable support. I would also like to thank my colleagues and all the batch mates who were always welcoming. Last but not the least, I would like to thank the administrative team for their constant support and guidance throughout and for caring about us tremendously during the difficult time of Covid-19. Thank you to all the members of HMU.

## REFERENCES

1. A. A. Al-Fahham, “Correlation between oxidative stress and thyroid hormone levels in infertile women,” *Int. J. Sci. Res. Publ.*, vol. 5, no. 12, p. 128, 2015.
2. C. P. Janisch and A. Schubert, “WHO Special Programme of Research, Development and Research Training in Human Reproduction (HRP),” *Geburtshilfe Frauenheilkd.*, vol. 51, no. 1, pp. 9–14, 1991.
3. P. Khanal, “Infertility: An Emerging Issue in Nepal,” no. April, 2020.

4. Z. Zhou *et al.*, "Epidemiology of infertility in China: a population-based study," *BJOG An Int. J. Obstet. Gynaecol.*, vol. 125, no. 4, pp. 432–441, 2018.
5. P. Neupane, D. Sharma, P. P. Panta, B. Aryal, T. Poudel, and K. Amgain, "Causes of Infertility amongst Couples Visited at Infertility Centre Kathmandu, Nepal," *J. Karnali Acad. Heal. Sci.*, vol. 2, no. 2, pp. 133–137, 2019.
6. Naina Purkayastha and H. Sharma, "Prevalence and potential determinants of primary infertility in India: Evidence from Indian demographic health survey," *Clin. Epidemiol. Glob. Heal.*, vol. 9, no. August 2020, pp. 162–170, 2021.
7. E. Saridogan, "Role of general gynaecologists in the prevention of infertility," *Best Pract. Res. Clin. Obstet. Gynaecol.*, vol. 59, pp. 132–136, 2019.
8. Roupa Z *et al.*, "Cause of infertility in woman at reproductive age," *Heal. Sci. J.*, vol. 3, no. 2, pp. 80–87, 2009.
9. A. H. Zargar, B. A. Laway, A. I. Wani, M. Salahuddin, and S. R. Masoodi, "Epidemiologic and etiologic aspects of primary infertility in the Kashmir region of India," *Fertil. Steril.*, vol. 68, no. 4, pp. 637–643, 1997.
10. S. Z. Masoumi *et al.*, "An Epdemologic Survey On The Causes Of Infertility In Patien Referred To Infertility Center In Fatimieh Hospital In Hamadan. Iranian Journal Reproductive Medicine," *Iran J Reprod Med*, vol. 13, no. 8, pp. 513–516, 2015.
11. WHO, "WHO infertility.pdf." 2016.
12. A. L. Greil, K. S. Slauson-Blevins, S. Tiemeyer, J. Mcquillan, and K. M. Shreffler, "A new way to estimate the potential unmet need for infertility services among women in the United States," *J. Women's Heal.*, vol. 25, no. 2, pp. 133–138, 2016.
13. U. Larsen, G. Masenga, and J. Mlay, "Infertility in a community and clinic-based sample of couples in Moshi, northern Tanzania," *East Afr. Med. J.*, vol. 83, no. 1, pp. 10–17, 2006.
14. S. R. Tamrakar and R. Bastakoti, "Determinants of Infertility in Couples," *J. Nepal Health Res. Counc.*, vol. 17, no. 1, pp. 85–89, 2019.
15. R. Gajbhiye, J. N. Fung, and G. W. Montgomery, "Complex genetics of female fertility," *npj Genomic Med.*, vol. 3, no. 1, 2018.