

# Clinical pattern of Infertility among Couple in Reproductive Age Group Attending in a Tertiary Care Centre

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## ABSTRACT

### Background

Infertility is the inability to conceive after a period of one year of regular unprotected intercourse. The problem of infertility has affected about 10-15% of couples worldwide including Nepal. About 6.9-9.3% is the approximate prevalence of infertility in developing countries.

### Objective

To investigate the age distribution and ethnicity, factors of infertility, and association between age of marriage and infertility among infertile couples attending infertility clinic in the tertiary care.

### Method

A Descriptive Cross-Sectional study was carried out among the participants (n=156) those enrolled between 1<sup>st</sup> March 2024 and 30th May 2024 among reproductive age group couples attending in Infertility clinic of Paropakar Maternity and Women's Hospital. Data was collected and analyzed in by using SPSS version 17.0.

### Result

Among 156 infertile couples, 19% Brahman, 34% were Chhetri followed by 24% Newar, 16% Mongolian and 7% Madhesi. The study revealed that infertility in 34% of cases was female, 30.1% was male, 22.4% is both male and female, and 13.5% is unknown. The study found that out of 53 infertile females, 41.51% had tubal abnormalities, followed by ovarian, multiple, and uterine abnormalities. The most common problem studied in male was semen abnormalities like asthenozoospermia, oligozoospermia, azoospermia, and teratozoospermia. The mean age of male was 33.37 years with minimum age being 20 years and maximum 48 years. In case of female subjects, mean age was 30.56 years with youngest age being 18 and oldest being 44.

### Conclusion

Infertility is a global health challenge as the fertility rate has been steadily falling since 1976. The incidence of secondary infertility was found to be 6.9-9.3%. This may be linked to changes in people's socioeconomic situations, such as women not having better access to healthcare and education, as well as the successful execution of government policy resource. Fertility varies, nevertheless, depending on factors including caste/ethnic group, religion, ecological zone, and residential region. We should aim to raise the nation's literacy rate and begin the improvement at the local level.

## KEY WORDS

*Couple, Fertility, Infertility, Lifestyle, Menstrual period, Sedentary*

## INTRODUCTION

Infertility is the inability to conceive after a period of one year of regular unprotected intercourse.<sup>1</sup> The problem of infertility has affected about 10-15% of couples worldwide including Nepal.<sup>2</sup> About 6.9-9.3% is the approximate prevalence of infertility in developing countries.<sup>3</sup> Main risk factors of infertility are the age of the mother, menstrual history, late marriage, excessive alcohol drinking, smoking, tobacco use in any form, obstetric history, miscarriages and frequent abortion, body mass index (BMI), sedentary lifestyle and environmental conditions.<sup>4</sup>

Problems in conceiving can result from the reasons of either or both partners. Some major factors are abnormal reproductive tract, bad quality of sperm and embryo, abnormalities in the implantation process, and immunological factors.<sup>5</sup> So, all possible diagnoses must be taken into consideration before invasive treatments are taken.

Millions of young fertile age groups have migrated for jobs, especially in Nepal and when they return after a long gap this may have reduced fertility.<sup>6</sup> Many a time, the migrants when returning home might carry sexually transmitted diseases which can lead to infertility.<sup>7</sup>

Furthermore, the precise prevalence and causes of infertility in Nepal are still unknown. The reason is unexplained infertility is made when a cause is not identified after the completion of standard fertility investigations. It accounts for nearly 40% of female infertility and 8% to 28% of infertility in couples.<sup>8</sup> Majority of male factor abnormality was due to exposure to heat as these male works abroad in Arabian Countries.<sup>7</sup> The study shows a dominance of secondary infertility and male factor being a major contributor.<sup>9</sup> The most common semen abnormality was oligospermia.<sup>10</sup> Infertility causes changed as the age of marriage increase. In couples married for less than 5 years, PCOS was the main cause whereas later, male factor and unexplained infertility were the most common causes seen. Male factor contributed to 20% of the cases of infertility, and both tobacco and alcohol consumption was significantly associated with abnormal semen reports.<sup>11</sup>

This study investigates the age distribution of infertile couples, their primary/secondary infertility patterns, the causes of infertility based on age, sex, marriage duration, and its association with age and ethnicity.

## METHODS

A Descriptive Cross-Sectional study was done on participants (n=156) who were enrolled from 1<sup>st</sup> March 2024 to May 30<sup>th</sup> 2024 (3 month) period among reproductive age group couples attending in Infertility clinic of Paropakar Maternity and Women's Hospital, after getting ethical approval from NAMS 323/2080/81 number. The inclusion criteria were all

infertile male and female who were attending the center for the treatment of infertility among age factor: > 15 and < 49 years. Likewise, exclusive criteria were who don't give consent for the study and who are < 15 and > 49 including both the sexes. After that data was collected after getting written consent from participants. During the first visit, a detail history of the couples was taken after doing examination, and reviewing any records. The data was documented in an organized case record. The document enclosed with following information like - demographic details, detailed infertility history including history of any previous treatment taken, surgical history, and coital history. An examination finding was documented including the general and specific examination findings. Reports of investigations done and any detail of any previous infertility treatment taken were included in documents.

The sample size was calculated using the formula:

$$\text{Sample size (n)} = 4pq / d^2$$

$$= 4 \times 48 \times 52 / 8^2$$

$$= 9984 / 64$$

$$= 156 \text{ sample}$$

Where,

P= prevalence (48%)

q= (100-48)% =52%

d= 8(sampling error)<sup>8</sup>

Data collected and analyzed in MS-Excel by using SPSS version 17.0. Descriptive statistics was ascertained by taking out frequency and percentage. The sampling was carried out systematically using a list of the infertile couple registered in the center. The systematic sampling method was carried out in a way that women whose medical records were archived in the center were randomly selected; the sample interval was determined by dividing the total number of qualified subjects by the number of individuals required in the sample.

## RESULTS

The mean age of male was 33.37 with minimum age being 20 years and maximum 48 years. Out of 156 male, 36.5% (57) were of age group 26-45 and 36-45 each while only 3.8% (6) were of age group more than 46 years.

In case of female subjects, mean age was 30.56 with youngest age being 18 and oldest being 44. Maximum of them were of age group 26-35 with 50.6% (79) while none of the subjects were of age group more than 46 as shown in table 1.

Prevalence of primary infertility was found to be more than secondary infertility as out of 156 couples, 105 (67.30%) couples were found to have primary infertility and 51

**Table 1.** Distribution of infertility on the basis of age and gender (n=156)

Age group (years)	Male		Female	
	Number	Percentage (%)	Number	Percentage (%)
≤ 25	36	23.1	39	25
26-35	57	36.5	79	50.6
36-45	57	36.5	38	24.4
≥ 46	6	3.8	0	0
Total	156	100	156	100
Mean age	33.37		30.56	
Oldest	48		44	
Youngest	20		18	

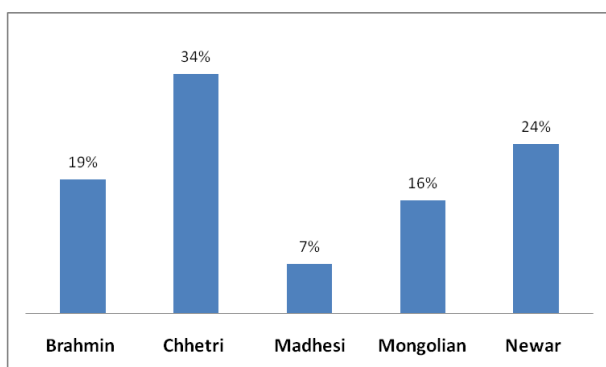
**Table 2.** Pattern of infertility (n=156)

Age group	Type of infertility in male			Type of infertility in female		
	Primary	Secondary	Total	Primary	Secondary	Total
15-25	28	8	36	31	8	39
26-35	44	13	57	61	18	79
36-45	31	26	57	13	25	38
> 46	2	4	6	-	-	-
Total	105	51	156	105	51	156
Percent	67.30%	32.69%	100%	67.30%	32.69%	100%

Chi-Square Tests, P=0.08      Chi-Square Tests, P=0.00

(32.69%) couples had secondary infertility which was statistically significant ( $p=0.00$ ). Forty four male individual of age group 26-35 were found to have primary infertility and 26 male individual of age group 36-45 were found to have secondary infertility.

Similarly, in case of female 61 individual of age group 26-35 were having primary infertility while 25 female individual of age group 36-45 were having secondary infertility. The maximum couple suffering from primary infertility was of age group 26-35 while those suffering from secondary were of age group 36-45.

**Figure 1.** Frequency of infertility according to ethnicity (n=156)**Table 3.** Frequency of infertility in male and female (n=156)

Infertility	Frequency	Percentage (%)
Female	53	34
Male	47	30.1
Both Male and Female	35	22.4
Unexplained	21	13.5

Among 156 couples, maximum, 34% were Chhetri followed by 24% Newar, 19% Brahman, 16% Mongolian and 7% Madhesi.

In the study, cause of infertility in 34% of case was found to be due to female factor, 30.1% of case due to male factor, 22.4% of couple had infertility due to both male and female factor while in 13.5% of cases the factor of infertility was not known (unexplained).

**Table 4.** Male and Female contributory factors (n=156)

Female factor			Male factor		
Abnormality	N	%	Abnormality	N	%
Ovarian	16	30.19	Asthenozoospermia	14	29.78
Tubal	22	41.51	Oligozoospermia	12	25.54
Uterine	7	13.21	Azoospermia	11	23.40
Multiple	8	15.09	Teratozoospermia	10	21.28
Total	53	100	Total	47	100

Out of 53 infertile females, 41.51% ( $n = 22$ ) of maximum cases were having tubal abnormalities followed by 30.19% ( $n = 16$ ) ovarian abnormalities, 15.09% ( $n = 8$ ) multiple abnormalities and 13.21% ( $n = 7$ ) uterine abnormalities.

Among 47 infertile male, most common semen abnormalities were asthenozoospermia 29.78% ( $n = 14$ ) followed by oligozoospermia 25.54% ( $n = 12$ ), azoospermia 23.40% ( $n = 11$ ) and teratozoospermia 21.28% ( $n = 10$ ) in this study (Table 4).

The mean duration of marriage seeking for infertility treatment was  $6.21 \pm 5.08$ . According to table number 5, mostly couples married for less than 5 years accounting to 56.4% (88) were suffering from infertility and 43.6% (68) couples married for more than 5 years were infertile.

**Table 5.** Association of infertility with duration of marriage (n=156)

Type of infertility	Duration of marriage of couple seeking treatment		Total
	< 5 years	≥ 5 years	
Primary	69	36	105
Secondary	19	32	51
	88	68	156

P= 0.001

Primary infertility was found to be more, 65.72% (69) in case of couple married for less than five years while secondary fertility was higher 62.74% (32) in couple married for more than five years.

## DISCUSSION

The maximum numbers of infertile cases in male were of age group 26-45 and in female were 26-35 years with the mean age being 33.37 and 30.56 respectively. The mean age of infertility in our study is similar to Kamali et al. with mean age of male  $33.6 \pm 6.3$  and mean age of female  $28.2 \pm 5.8$ .<sup>9</sup> Also our study has similar result as Tamrakar et al. with mean age of  $26.85 \pm 4.78$  years for female and  $29.81 \pm 3.18$  years for male.<sup>10</sup>

In our study, primary infertility was found in 67.30% and secondary infertility in 32.69% of cases in concordance with another study done by Kamali et al., Bhattarai et al., and Shrivastava et al. who stated primary fertility to be 90.1%, 53.2% and 65.8% respectively which is in higher proportion than secondary infertility.<sup>9,11,12</sup> A number of studies show higher percentage of primary infertility as compared to secondary infertility, though in different proportions.<sup>9,11,12</sup>

The ethnic distribution of the infertile cases in this study shows 34% Chhetri followed by 24% Newar, 19% Brahman, 16% Mongolian and 7% Madhesi which was similar for Bramhin 18.7% as stated by Tamrakar et al. but our findings regarding ethnicity is not comparable with them as we have relatively very smaller sample size.<sup>10</sup>

The most common causes of infertility were female factor in 34% of couples followed by male factor 30.1% of case, 22.4% of couple had infertility due to both male and female factor while in 13.5% of cases the factor of infertility was not known (unexplained). Similar as our case Tamrakar et al. reported female factor as the major cause of infertility; 48.8% cases are having only female factor, but other causes do not match with our proportion showing 10.1% cases having only male factor, 26.6% having both male and female actor while 14.4% cases are with unexplained infertility.<sup>10</sup> In contrast to our study Kamali et al. presented male factor as the most cause of infertility in 50.5% of couples, female factor in 28.6%, both male and female factors in 11.6% and unexplained causes in 9.3% of couples.<sup>9</sup>

Out of 53 infertile females, 41% ( $n = 22$ ) of maximum cases were having tubal abnormalities followed by 30.19% ( $n = 16$ ) ovarian abnormalities, 15.09% ( $n = 8$ ) multiple abnormalities and 13.21% ( $n = 7$ ) uterine abnormalities. Our finding was in contract to Tamrakar et al. as they stated

that among the female contributory factors, half of them (52.12%) had ovulatory cause followed by tubal pathology (15.53%), and uterine causes (8.8%).<sup>10</sup> Similarly in case of male, among 47 infertile male, most common semen abnormalities were asthenozoospermia 29.78% ( $n = 14$ ) followed by oligozoospermia 25.54% ( $n = 12$ ), azoospermia 23.40% ( $n = 11$ ) and teratozoospermia 21.28% ( $n = 10$ ) the frequency of semem abnormality match with Tamrakar et al. where most common semen abnormalities were found to be asthenozoospermia followed by oligozoospermia, azoospermia and teratozoospermia.<sup>10</sup>

The mean duration of marriage seeking for infertile case is  $6.21 \pm 5.08$  in our study which was similar with the studies by Al-Turki et al. and Anwar et al. reporting 5.39 and  $4.3 \pm 0.5$  respectively.<sup>13,14</sup> Primary infertility was found to be more, 65.72% (69) in case of couple married for less than five years while secondary fertility was higher 62.74% (32) in couple married for more than five years.

As our study is single centre done in small sample size for very short duration of time, result may not represent entire population. Further studies at multiple study centres with proper diagnostic technique are recommended for better result.

## CONCLUSION

Infertility is a global health challenge as the fertility rate has been steadily falling since 1976. The incidence of secondary infertility was found to be 6.9-9.3%. This may be linked to changes in people's socioeconomic situations, such as women not having better access to healthcare and education, as well as the successful execution of government policy resource. Fertility vary, nevertheless, depending on factors including caste/ethnic group, religion, ecological zone, and residential region. We should aim to raise the nation's literacy rate and begin the improvement at the local level. The etiological pattern of infertility varies across different regions of the world. Both male and female factors can contribute to infertility, so before beginning aggressive fertility treatments, both partners should receive appropriate counseling and investigation. The etiological pattern of infertility has not been thoroughly studied, so this study has been conducted to determine the cause and clinical pattern of infertility in married couples.

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