

## STUDY ON PREVALENCE AND DEMOGRAPHIC FACTORS ASSOCIATED WITH PRIMARY INFERTILITY IN A TERTIARY CARE CENTRE IN NORTH INDIA

**Dr. NAMITA CHANDRA<sup>1</sup>** (first and corresponding author), Associate Professor, Dept. of OBG, TSM Medical College, Lucknow

**Dr. NIDHI SINGH<sup>2</sup>** (second author), Professor, Dept. of OBG, Mayo Institute of Medical Sciences, Barabanki

### ABSTRACT

**Background:** Fertility is a worldwide human concern and anguish over infertility is its obvious upshot. The problem of infertility confronts millions of people worldwide. In most cultures, 'being childless' is an undesired social role and infertility is an 'unexpected life transition'. However, the infertility estimates use different definitions considering different periods, which makes direct comparisons difficult between various studies. The definition, as well as the etiological causes associated with infertility, differs from region to region. It depends on social and physical characteristics that vary by culture and situation, leading to the absence of the universal definition of infertility worldwide. Clinicians define infertility as a disease of the reproductive system due to which women fail to achieve pregnancy after regular unprotected sex for twelve or more months (WHO, ICMART). In contrast, demographers define it as the inability of women in their reproductive age (15–49) years to become pregnant after exposure to pregnancy for five or more years.

**Objectives of the study:** to determine the prevalence of primary infertility in women aged 18-49 years and to study the demographic risk factors associated with primary infertility.

**Materials and Methods:** The data were collected by face-to-face interview with the help of predesigned and pretested questionnaire. Informed consent was taken from the study participants after explaining them the objectives of the study and ensuring the confidentiality of the data. The questionnaire was designed to obtain information regarding age, religion, socioeconomic status, education of women, duration of marriage, age at marriage, occupation status, type of family, menstruation pattern, age of menarche, first child born after marriage, and family history of infertility. History of menstruation pattern was seen for the time span of 10 years since marriage. The socioeconomic class of the sample group was determined by modified BG Prasad's classification. Direct-attached storage scale was used to determine depression, anxiety, and stress. The interview took approximately 15–20 min per participant.

**Discussion and Conclusion:** In the present study, out of the 600 eligible women included in the study, 48 of them had primary infertility in the age group of 18-49 years. The prevalence of primary infertility in study was found to be (8%). We evaluated the demographic factors associated with infertility, we found that demographic factors are significantly associated with primary infertility were higher educational level, staying in nuclear family and higher socioeconomic status. The prevalence of primary infertility our population was found to be 8%. Knowledge about the prevalence of infertility and its associated risk factors is extremely important for health-care providers and policymakers to design and implement various policies related to prevention and treatment of infertility. We found statistically significant association between demographic factors and primary infertility.

**Key-words:** primary infertility, demographic factors, education level, socioeconomic status and type of family.

## INTRODUCTION:

Fertility is a worldwide human concern and anguish over infertility is its obvious upshot. The problem of infertility confronts millions of people worldwide.<sup>1</sup> In most cultures, 'being childless' is an undesired social role and infertility is an 'unexpected life transition'.<sup>2</sup> However, the infertility estimates use different definitions considering different periods, which makes direct comparisons difficult between various studies.<sup>3</sup> The definition, as well as the etiological causes associated with infertility, differs from region to region.<sup>4</sup> It depends on social and physical characteristics that vary by culture and situation, leading to the absence of the universal definition of infertility worldwide. Clinicians define infertility as a disease of the reproductive system due to which women fail to achieve pregnancy after regular unprotected sex for twelve or more months (WHO, ICMART). In contrast, demographers define it as the inability of women in their reproductive age (15–49) years to become pregnant after exposure to pregnancy for five or more years.<sup>5</sup>

Slightly over half of all infertility cases are a result of female conditions, while sperm disorder or unknown factors are associated with the rest of the causes. The literature indicates that the problem of infertility can happen because of either of the spouse or both. However, most of the time, women are blamed for it, considering it as a particular problem among females, particularly in developing countries.<sup>6</sup> Infertility is a significant clinical problem today, affecting 8–12% of couples worldwide.<sup>7</sup> A minimum of 80 million pairs suffer from involuntary infertility worldwide, secondary infertility (having had a previous pregnancy) rates were double the primary infertility rates, where primary infertility (no previous pregnancy) rate range from 3 to over 30%.<sup>8</sup> Genetic and environmental factors including infectious or parasitic diseases, lifestyle, stress, postponing parenthood, and obesity might consider as essential determinants of infertility.<sup>9, 10, 11, 12</sup> Around 60% of the variation in total fertility in 18 sub-Saharan countries are the result of infertility. According to a study, for each increase in 9% points in the proportion of women with no children and of age 45 to 49, fertility decreases by one birth.<sup>13</sup>

The estimates of infertility in India by census 1981 are around 4–6% whereas adding both primary and secondary infertility; the total number is about 17.9 million.<sup>14,15</sup> In India, the overall prevalence of primary infertility lies in between 3.9% and 16.8%, as per WHO estimates.<sup>16</sup> Infertile women in the developing world have an additional disadvantage of being substantially limited in their participation in societal activities.<sup>17</sup> The present study was undertaken to estimate the prevalence of infertility and associated risk factors.

## AIM AND OBJECTIVES:

To determine the prevalence of primary infertility in reproductive married women aged 18-49 years and to study the risk factors associated with primary infertility.

**MATERIALS AND METHODS:** The study was conducted in Prasad Institute of Medical Sciences, Department of OBG in association with urban and rural centre attached to our

tertiary care hospital in the women aged 18-49 years, at our tertiary care centre for one year duration from 2021 to 2022.

**Study design:** community and hospital based cross-sectional study.

**Sample size:** 600 reproductive married women in the age group 18-49 years were enrolled. As per the WHO data, the estimated prevalence of primary infertility among reproductive age group women in India is 11.8%. Using the prevalence of 11.8% and considering 20% chance of nonrespondent and incomplete data, we included a total of 600 women.

**Inclusion Criteria:** we included the women willing to give consent with infertility in the age group 18-49 years.

**Exclusion Criteria:** We excluded divorced, widowed and menopausal women.

**Sampling:** systematic random sampling

**Data Collection:** The data were collected by face-to-face interview with the help of predesigned and pretested questionnaire. Informed consent was taken from the study participants after explaining them the objectives of the study and ensuring the confidentiality of the data. The questionnaire was designed to obtain information regarding age, religion, socioeconomic status, education of women, duration of marriage, age at marriage, occupation status, type of family, menstruation pattern, age of menarche, first child born after marriage, and family history of infertility. History of menstruation pattern was seen for the time span of 10 years since marriage. The socioeconomic class of the sample group was determined by modified BG Prasad's classification. Direct-attached storage scale was used to determine depression, anxiety, and stress. **Statistical analysis:** The association of variables was done by Chi-square test with 95% confidence interval (CI). Odds ratio (OR) was used to compare variables of normal and infertile reproductive age group women. Chi-square tests were two-sided, and  $P < 0.05$  was considered statistically significant.

## RESULTS:

Out of the 600 eligible women included in the study, 48 of them had primary infertility in the age group of 18-49 years. The prevalence of primary infertility in study was found to be (8%).

Age	Number	Frequency
18-25 years	78	13
26-30 years	280	46.7
31-35 years	64	10.7
36-40 years	80	13.33
41-45 years	68	11.33
46-49 years	30	5
Total	600	100

<b>Table 2: Shows the demographic factors associated with primary infertility</b>			
	Infertile women (no = 48)	Normal women (no =552)	P value
Age at marriage			
>25	13	22	HS
<25	35	530	
Type of family			
Nuclear	42	400	HS
Joint	6	130	
Socioeconomic status			
I and II	41	352	S
III, IV and V	7	200	
Literacy status			
Middle school and above	40	350	S
Below middle school	8	202	
Occupation			
Employed	28	150	HS
Home maker	20	402	
Family h/o infertility			
Yes	22	42	HS
No	26	510	

## DISCUSSION:

In the present study, out of the 600 eligible women included in the study, 48 of them had primary infertility in the age group of 18-49 years. The prevalence of primary infertility in study was found to be (8%). We evaluated the demographic factors associated with infertility, we found that demographic factors are significantly associated with primary infertility were higher educational level, staying in nuclear family and higher socioeconomic status.

According to the WHO report, the prevalence of primary infertility in India was 3.9% (age-standardized to 25–49 years) and 16.8% (age-standardized to 15–49 years) using the “age but no birth” definition.<sup>18</sup> In large population survey by Boivin *et al.*, the prevalence rate of primary infertility ranged from 3.5% to 16.7% in more developed nations and 6.9% to 9.3% in less-developed nations, with an estimated overall median prevalence of 9%.<sup>19</sup> This study included women aged 20–44 years and married or living in a consensual union. Another study by Adamson *et al.*, from South India found the prevalence of primary infertility of 12.6%. In this study, authors included women with age between 15 and 30 years. Similar prevalence was also found in study from Kashmir region.<sup>20</sup> Kumar investigated extensive infertility problem in women aged 15–49 years from Khairwar to non Khairwar tribes in rural area of Central India.<sup>21</sup> The total prevalence of primary infertility in study population was 14.2%. The prevalence of infertility was higher in Khairwars (17.2%) than in non-Khairwars (10%). Author has related higher rate of infertility in Khairwar tribe to lack of access to the Indian health delivery system and their belief in local traditional healers (gunias). Thus, the prevalence of primary infertility varies not only between countries but also within country. Another important aspect is the large variation in inclusion criteria between different studies making comparison difficult.

The study found that the incidence of infertility increases with the women's age because for a pregnancy to occur, several things have to happen, such that, an egg must develop in the women's ovary. The egg has to be released each month into the fallopian tube. A men's sperm must fertilize the eggs in the fallopian tube. The fertilized eggs must be able to travel through the fallopian tube and attach in the lining of the uterus. If any of these events do not happen or are disrupted, it will result in infertility. Again, quantity and quality of eggs decrease with the women's age. So women marrying above 30 years show the highest rate of infertility problems and most of them were primary infertility. Infertility problems may be because of either male or female problems or combined. However, the most common problem of female infertility is ovulation problem; tubal blockage, age related factors, uterine problems, sexual disorder and other unknown causes. With the advancement of medical sciences, today, about 85 percent of causes of infertility can be taken care of using appropriate surgical and medical interventions such as assistant reproductive technology (ART). The rapid increase in the number of infertility clinics providing "ART" services is a good indication for the people looking for solution. Although ART offers a hope to infertile couples to bear a biological child, several issues remain to be addressed.<sup>22</sup> In the recent past, due to rapid urbanization, elevated standard of living, rise in education status, women are becoming more independent and are following the trends of modern lifestyle. This appraisal of socioeconomic status of women has contributed to modified dietary habits, physical inactivity, which is considered to be the risk factors of developing primary infertility.<sup>23</sup> Socioeconomic status is one of the risk factors for infertility.

**CONCLUSION:** The prevalence of primary infertility our population was found to be 8%. Knowledge about the prevalence of infertility and its associated risk factors is extremely important for health-care providers and policymakers to design and implement various policies related to prevention and treatment of infertility. We found statistically significant association between demographic factors and primary infertility.

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