

Original research article

# PREVALENCE AND BIO-SOCIAL CORRELATES OF INFERTILITY IN RURAL FIELD PRACTICE AREA OF BHAGALPUR

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## Abstract

**Background and objective:** Infertility is a global health issue, affecting approximately 8-10% couples worldwide. The 1981 census of India estimated infertility to be in the range of 4-6%. The biological and social factors including stress due to economic status, religious attitudes, age at marriage, higher literacy, contraceptive usage and nuclear families play a significant role in lowering fertility. In this background present study was undertaken to find out the prevalence and factors influencing primary and secondary infertility among couples in rural field practice area of Nathnagar.

**Methods:** The present cross sectional study was conducted at Bhagalpur Primary Health Centre area, which is the rural field practice area of Department of Community Medicine, JLNMC Bhagalpur. from Feb 2020 To Feb 2021 for a period of one year. Complete enumeration of the entire Nathnagar Primary Health Centre area was done to identify couples with either primary or secondary infertility. Data was collected using predesigned pretested structured proforma by interview technique.

**Results:** Prevalence of infertility in the study area was 8.1% among which prevalence of primary infertility was 4.5% and secondary infertility was 3.6%. The most common cause of infertility among females was pelvic inflammatory disease followed by polycystic ovarian disease and among males it was oligospermia. The bio social factors found significantly associated with primary infertility were family history of infertility, hypothyroidism, abnormal vaginal discharge, irregular menstrual cycles among females and among males hypothyroidism, family history of infertility, alcohol and tobacco consumption.

**Conclusion:** This study has yielded important information regarding the prevalence and risk factors influencing infertility. Efforts to raise awareness in the population about the causes of infertility are needed.

**Keywords:** Primary infertility; secondary infertility; prevalence; Body Mass Index.

## Introduction

Infertility is a public health problem. The main patterns in infertility is primary and secondary infertility.<sup>1</sup> Infertility is divided into primary and secondary infertility. The operational definition, put forth by World Health Organization (WHO), using a two year

reference period, defines primary infertility as the lack of conception despite cohabitation and exposure to the risk of pregnancy (in the absence of contraception) for a period of two years or more. Secondary infertility is defined as the failure to conceive following a previous pregnancy despite cohabitation and exposure to the risk of pregnancy (in the absence of contraception, breastfeeding or post partum amenorrhea) for a period of two years or more.<sup>2</sup> A couple is considered clinically infertile only when pregnancy has not occurred when desired, after at least 12 months of regular unprotected sexual activity.<sup>3</sup> Although WHO publication on the epidemiology of infertility has used a 2- years reference period.<sup>4</sup> Infertility is a global health issue, affecting approximately 8-10% couples worldwide. World Health Organization estimates that 60 to 80 million couples worldwide currently suffer from infertility.<sup>2</sup> A global review of infertility from the World Fertility Survey estimated rates of infertility in South Asia on the basis of women at the end of their reproductive lives, in the age group 45-49 years, suggests an infertility rate of approximately 8% in India, 10% in Pakistan, 11% in Sri Lanka, 12% in Nepal and 15% in Bangladesh.<sup>2</sup> The 1981 census of India estimated infertility to be in the range of 4-6%.<sup>2</sup> WHO estimates the overall prevalence of primary infertility in India to be between 3.9 and 16.8 percent.<sup>5</sup> Estimates of infertility vary widely among Indian states. Moreover, the prevalence of primary infertility has also been shown to vary across tribes and castes within the same region in India.<sup>2</sup> According to NFHS-1 childlessness is around 2.4 percent of currently married women over 40 years in India. Childlessness in India is estimated around 2.5 percent. It is around 5.5 percent for 30-49 age group and 5.2 percent for 45-49 age group. In absolute terms it is around 4.9 million and if secondary infertility is also added to it then total number of infertile couples is around 17.9 million.<sup>6</sup> According to NFHS 3 survey approximately 4% of the Indian women are infertile of which about 1.8% live in rural India. Most of the women belong to a lower socio-economic status.<sup>6</sup> According to DLHS survey Karnataka, women who had primary and secondary infertility constitute 5.9 and 1.7 percent respectively of ever married women between 15-49 years. Infertility in rural area is 6.1% as compared to urban area which is 5.5%. Percentage of women who sought treatment for primary infertility in urban and rural areas are 76.9% and 85% respectively.<sup>7</sup> The underlying cause of infertility varies from one country to another and one locality to another. In majority of the cases (>55%), infertility arises as a consequence of sexually transmitted diseases or post partal complications or post abortion, particularly illegally induced abortions. All of these are to a large extent preventable.<sup>3</sup> Infertility has been attributed to male factors 25%, female 58% and unexplained in 17% couples; sometimes both male and female factors are present simultaneously. However in our country the infertility is a hidden social problem where the females and not the males are solely held responsible for the lifetime problem of having no child.<sup>8</sup> The stigma associated with male and female infertility in traditional societal interactions cause a high level of psychosocial distress with a direct impact on the couple's marital and sexual relations.<sup>9</sup> Infertility is not merely a health problem it is also a matter of social injustice and inequality.<sup>2</sup> Infertility has been recognized as an intrinsic part of family planning care. The recent concept of reproductive health seeks to provide family planning, maternal and child health & care of infertile couples together as a package.<sup>10</sup> The relative increase in adiposity in Indians has led to the suggestion that the BMI should be reduced for Indians and Asians. Hence the BMI (proposed WHO Asia-Pacific classification) is an appropriate measure for Asians for the assessment of obesity. The major drawback of BMI is, it does not differentiate between body fat and fat free mass (FFM).<sup>11</sup> women more vulnerable to reproductive tract infections which may cause secondary infertility among them. Patterns of treatment-seeking depend on the couple's socio-economic status, decision-making within the family, the level of information and accessibility of treatment.<sup>12</sup>

**Objectives**

To estimate the prevalence of infertility in the study population.

To describe the socio demographic characteristics prevailing among infertile subjects of the study population.

To identify the probable medical conditions associated with infertility.

To assess the psychosocial factors prevailing among the infertile couples of the study population.

**Material and Methods**

The present cross sectional study was conducted at Nathnagar Primary Health Centre area, which is the rural field practice area of Department of Community Medicine, Jawaharlal Nehru Medical College and Hospital Bhagalpur. from Feb 2020 To Feb 2021 for a period of one year. Complete enumeration of the entire Nathnagar Primary Health Centre area was done to identify couples with either primary or secondary infertility. Data was collected using predesigned pretested structured proforma by interview technique. Complete enumeration of the entire Nathnagar Primary health centre area was done to enumerate all eligible couples residing in the area and among them those who are exposed to risk of pregnancy were identified so as to find out couples with either primary or secondary infertility. Simple random sampling technique was used to choose one PHC among the three primary health centres in the rural field practice area of Department of Community Medicine, JLNMCH Bhagalpur, Complete enumeration of the entire Nathnagar PHC area was done.

**Inclusion criteria**

\*Couples with primary infertility were included means those couples with inability to conceive despite cohabitation and exposure to risk of pregnancy (in the absence of contraception) for a period of two years or more.

\*Couples with secondary infertility were included means those couples with inability to conceive following a previous pregnancy despite cohabitation and exposure to pregnancy for a period of two years or more (in the absence of contraception and post-partum amenorrhea) .

\*Couples where the wife is in reproductive age group between 15-49 years.

**Exclusion criteria:**

\*Those who are seriously ill.

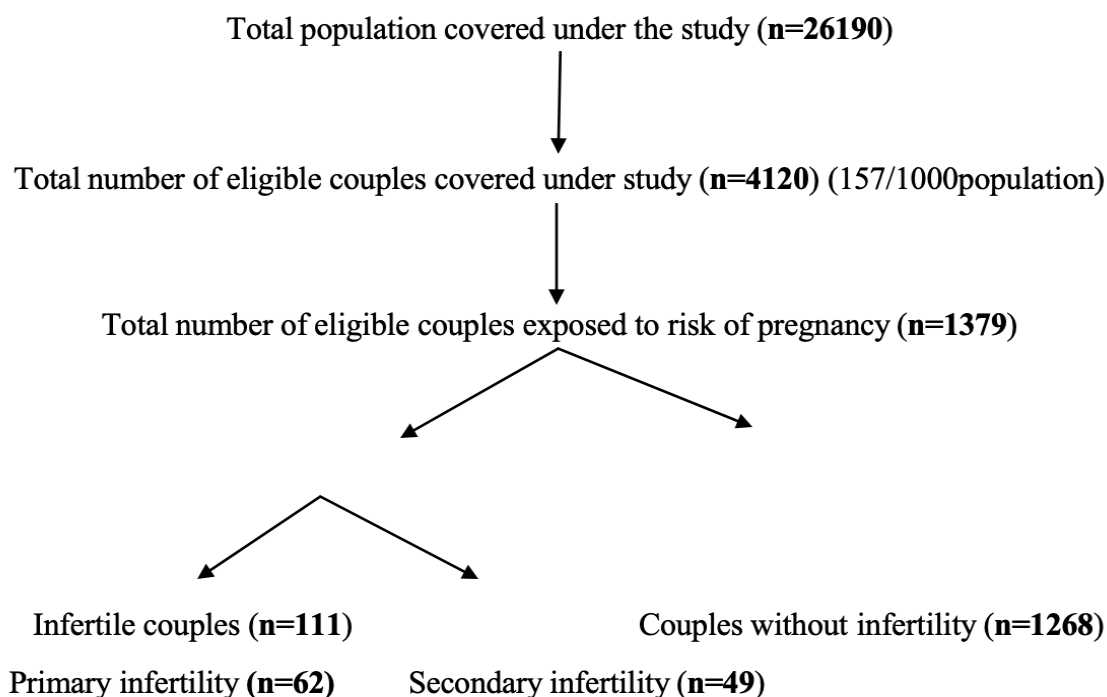
\*Couples not willing to participate and co-operate in the study.

Preliminary discussions were held with medical officer of Nathnagar Primary Health Centre, health worker male and female, ASHA (Accredited Social Health Activist) and Anganwadi workers(AWW) of Nathnagr PHC. Medico social workers of the department of Community Medicine (JLNMCH) were also involved in the study. Discussions were held explaining them the objective of the study and assuring them that the identity of the couples will be kept confidential.

A total of 26,120 people were accessed from 6,335 households. Nathnagar sub centre was covered sub centre was covered. House to house survey was done covering all the villages coming under these sub centers so as to completely enumerate the eligible couples. Among these eligible couples those who are exposed to the risk of pregnancy were considered and couples with inability to conceive despite cohabitation and exposure to the risk of pregnancy (in the absence of contraception) for two years or more (as per WHO Epidemiological definition) were included and considered to have primary infertility and those with inability to conceive despite cohabitation and exposure to risk of pregnancy (in the absence of contraception, post-partum amenorrhoea) following previous pregnancy for a period of two

years or more were considered to have secondary infertility. These couples were included in the study after they fulfilled inclusion criteria.

## RESULTS



Total population covered under the study is 26,190. Among them number of couples were 5210. Among 5210 couples, total number of eligible couples was 4120. Eligible couples are currently married couples where the women are in the reproductive age group between 15-49 years. Among the eligible couples only 1379 were exposed the risk of pregnancy. Couples who are exposed to risk of pregnancy includes those who are cohabitating and not using any approved methods of contraception, where women is not pregnant and not in lactational amenorrhoea.

**Table1: Distribution of infertile couples according to age**

Age	Primary Infertility		Secondary Infertility	
	Males	Females	Males	Females
15-19	-	04(6.5)	-	01(02.1)
20-24	04(06.5)	26(41.9)	-	10(20.4)
25-29	21(33.9)	12(19.4)	11(22.4)	17(34.7)
30-34	14(22.6)	08(12.9)	13(26.5)	11(22.4)
35-39	10(16.1)	09(14.5)	10(20.4)	06(12.2)
40-44	11(17.7)	03(04.8)	10(20.4)	04(08.2)
45-49	02(03.2)	-	04(8.2)	-

>50	-	-	01(2.0)	-
<b>Total</b>	<b>62(100.00)</b>	<b>62(100.00)</b>	<b>49(100.00)</b>	<b>49(100.00)</b>

**Note:** Figures in parenthesis indicates percentages.

Males among couples with primary infertility was found to be highest 21(33.9%) in the age group of 25-29 years followed by 14(22.6%) in 30-34 years, 11(17.7%) in 40-44 years, 10(16.1%) were in age group of 35-39 years, 4(06.5%) in 20-24 years and least 02(03.2%) were present in 45-49 years. Females among couples with primary infertility were highest in the 26(41.9%) in the age group of 20-24 years followed by 12(19.4%) in the age group of 25-29 years, 09(14.5%) in the age group of 35-39 years, 08(12.9%) in the age group of 30-34 years, 04(6.5%) in the age group of 15-19 years and the least 03(04.8%) in the age group of 40-44 years. Males among couples with secondary infertility were highest 13 (26.5%) in 30 - 34 years followed by 11(22.4%) in the age group of 25-29 years, 10(20.4%) each in 35-39 and 40- 44 years, 04(8.2%) in 45-49 years and 01(2.0%) above 50 years.

Females among couples with secondary infertility were highest 17(34.7%) in the age group of 25-29 years, 11(22.4%) were in the age group of 30-34 years, 10(20.4%) in the age group of 20-24 years, 06(12.2%) were in age group of 35-39 years, 04(08.2%) were in age group of 40-44 years and 01(02.1%) least were in 15- 19 years.

**Table 2: Distribution of couples with infertility according to religion**

Religion	Total eligible couples (n=4120)	Couples with Primary infertility(%) (n=62)	Couples with Secondary infertility (%) (n=49)
Hindu	3237	47(01.45)	33(01.02)
Muslim	0662	14(02.11)	11(01.66)
Christian	0221	01(0.45)	05(02.26)

**Note:** Figures in parenthesis indicates percentages.

Out of 3237 Hindu couples 47(1.45%) had primary infertility, out of 662 Muslim couples 14(2.11) had primary infertility and out of 221 Christian couples only 1(0.45%) couple had primary infertility. Out of 3237 eligible couples belonging to Hindu religion 33(1.02%) had secondary infertility, out of 662 eligible couples belonging to Muslim religion 11(1.66%) had secondary infertility and out of 221 Christian couples 5(2.26%) had secondary infertility.

**Table 3: Distribution of couples with infertility according to type of family.**

Family	Total eligible couples (n=4120)	Couples with Primary infertility (%) (n=62)	Couples with Secondary infertility (%) (n=49)
Nuclear family	2568	41(01.60)	33(01.29)
Joint family	0890	17(01.91)	09(01.01)
Three generation family	0662	04(0.60)	07(01.06)

**Note:** Figures in parenthesis indicates percentages.

Out of 2568 eligible couples belonging to nuclear family 41(1.60%) had primary infertility, out of 890 eligible couples belonging to joint family 17(1.91%) had primary infertility and out of 662 couples belonging to three generation family 4(0.60%) had primary infertility. Out of 2568 eligible couples belonging to nuclear family 33(1.29%) had secondary infertility, out of 890 eligible couples belonging to joint family 9(1.01%) had secondary infertility and out of 662 eligible couples belonging to three generation family 7(1.06%) had secondary infertility.

**Table 4 Distribution of infertile couples according to socioeconomic status.**

Socioeconomic Status*	Couples with Primary infertility	Couples with Secondary infertility
Low	07(11.3)	09(18.4)
Medium	35(56.5)	19(38.8)
High	17(27.4)	19(38.8)
Very high	03(04.8)	02(04.1)
<b>Total</b>	<b>62(100.00)</b>	<b>49(100.00)</b>

**Note:** Figures in parenthesis indicates percentages.

Among couples with primary infertility highest were in 35(56.6%) medium socioeconomic status, 17(27.4%) were in high socio-economic status, 07(11.3%) belonged to low socioeconomic status and 3(4.8%) belonged to very high socioeconomic status. Among the couples with secondary infertility 19(38.8%) belonged to medium socioeconomic status and 19(38.8%) were in high socioeconomic status, 9(18.4%) belonged to low socioeconomic status and 02(4.1%) belonged to very high socioeconomic status.

**Table 5: Distribution of couples with infertility based treatment seeking pattern**

Health care facility availed	Primary Infertility		Secondary Infertility	
	Males (n=43)*	Females (n=50)*	Males (n=25)*	Females (n=31)*
Allopathy	42(97.67)	47(94.00)	21(84.00)	24(96.00)
Homeopathy	02(04.65)	02(04.00)	1(04.00)	3(12.00)
Ayurveda	02(04.65)	04(08.00)	2(08.00)	4(16.00)
Traditional healers	04(09.30)	06(12.00)	6(24.00)	6(24.00)
Switch over in system of medicine	04(09.30)	07(14.00)	5(20.00)	9(36.00)

**Note:** \* Multiple responses

42(97.67%) of males among couples with primary infertility who approached health care

facility had taken allopathic treatment followed by 4(9.30%) had approached traditional healers, 2(4.65%) had taken homeopathic and 2(4.64%) had taken ayurvedic treatment .47(94.00%) of females among couples with primary infertility who approached health care facility had taken allopathic treatment followed by 6(12.00%) approached traditional healers, 4(8.0%) had taken ayurvedic and 2(4.0%) had taken homeopathic treatment.

## DISCUSSION

In the present study, the overall prevalence of infertility was 8.1%. Prevalence of primary infertility was 4.5% and secondary infertility was 3.6% . The estimate of infertility in the present study area is higher than NFHS 3 survey which reported the prevalence of infertility in Indian women to be 4%.<sup>6</sup> According to DLHS survey women who had primary and secondary infertility constitute 5.9 and 1.7 percent respectively of ever married women between 15-49 years.<sup>7</sup> The present study findings is similar to DLHS survey where they found the prevalence of primary infertility to be higher than the secondary infertility. Study conducted by Paul C A et al on prevalence and correlates of primary infertility among young women in, India showed the prevalence of primary infertility to be 12.2% which is much higher than the prevalence in the present study.<sup>5</sup> Study conducted by Zargar AH et al to assess the magnitude of primary infertility and to study its etiologic aspects in Kasmir India showed the magnitude of primary infertility to be 4.66%.<sup>13</sup> Study conducted by Philippoy OS et al on estimation of the prevalence and causes of infertility in western Siberia showed prevalence of primary infertility to be 3.8% and study conducted by Abbas A et al on the epidemiological and etiological aspects of infertility in Yazd province of Iran showed prevalence of primary infertility to be 3.9% which are consistent with the results of the present study.<sup>14</sup> In the present study couples with primary infertility were common in 20-24 years age group which is similar to study conducted by Paul CA et al in Mysore on prevalence of primary infertility where majority 55.8% were found in this age group.<sup>5</sup> The highest prevalence of the infertility was among the highly reproductive age group. Primary infertility was found highest 2.11% among Muslims and secondary infertility was found to be highest 2.26% among Christians which is different from study conducted by Paul CA et al on prevalence and correlates of primary infertility among young women, India where they found prevalence of primary infertility to be maximum among Hindus.<sup>5</sup> In the present study couples educated till high school had highest prevalence of infertility which is similar to study conducted by Nicole JW et al on consequences of infertility in developing countries where 39% had education till high school.<sup>21</sup> With increase in level of education among women, total fertility rate decreases, In the present study majority of couples with infertility (Primary infertility- 38.8% and secondary infertility 53.2%) belonged to medium socioeconomic status which is similar to findings of study conducted by Maha A et al where most of infertile couples 56.6% belonged to medium socioeconomic status and also in a study conducted by Abbas A et al on the epidemiological and etiological aspects of infertility in Yazd province of Iran where 49.9% belonged to middle socioeconomic status.<sup>15</sup>

Our study did not prove the fact that infertility is commonly found in lower socioeconomic status which could be because of the fact that standard of living index was taken into consideration which considers mainly the material things rather than monthly income. Duration of infertility was less than 5 years in majority of infertile couples . Higher the duration of infertility lesser number was found as they would approach the health care facility for treatment seeking. Study conducted by Obuna JA et al on Clinical Presentation of Infertility in an Outpatient Clinic of a Resource Poor Setting, South-East Nigerian also showed maximum number of infertile couples in 1-5 years age group (46.2%) and least with 21 (1.9%) and more years of infertility.<sup>16</sup> Most of the help-seeking is undertaken by women,

both traditional and modern biomedical health services, as was revealed in present study also. The provision of health education as an integral part of infertility management into reproductive health care programmes is needed. At the same time the importance of traditional health services in infertility management should be recognized as an important factor.

## CONCLUSION

\*Prevalence of infertility in the study area was **8.1%** among which prevalence of primary infertility was **4.5%** and secondary infertility was **3.6%**.

\*Most common co-morbid condition among females with infertility was pelvic inflammatory disease followed by polycystic ovarian disease and among males it was oligospermia.

## References

1. N.M. Abdalla Epidemiology of Infertility in Gezira, Central of Sudan. Research Journal of medical Sciences 5(1):56-60, 2011 Physiological Sciences 24 (2): 85 – 90.
2. D Kumar. Prevalence of female infertility and its socio economic factors in tribal communities of central India. Rural and remote health [online] 2007 May [cited 2011 Aug 10];7(456);[Screens5].
3. Rowe PJ, Comhaire FH, Hargreave TB and Mellows HJ. WHO manual for the standardized investigation and diagnosis of the infertile couple. New York: Cambridge University Press. 1993
4. World health Organization . Program on maternal and child health and family planning. Division of family health. Infertility: a tabulation of available data on prevalence of primary and secondary infertility. Geneva:1991.
5. Paul CA, Karl K, Alexandra HF, Jeffery DK, Arthur LR, Purnima M. Prevalence and correlates of primary infertility among young women in Mysore, India. Indian J Med Res 2011 Oct;134:440-446.
6. Ganguly S, Unisa S. Trends of Infertility and Childlessness in India Findings from NFHS Data. F, V & V IN OBGYN. 2010; 2 (2):131-8
7. International Institute for Population Sciences (IIPS). District Level Household and Facility Survey (DLHS-3) 2007-08. Mumbai:2010.
8. Shireen J. Jejeebhoy Infertility in India-levels, patterns and consequences: Priorities for social science research. Journal of family welfare 1998 June; 44(2):15-24.
9. Sumera A. Knowledge, perceptions and myths regarding infertility among selected adult population in Pakistan: a cross sectional study. BMC Public health; 11:760.
10. Larsen. U. Infertility and Infertility Counselling. Journal of family welfare 1984 Dec; 31 (2): 34-47.
11. Niharika T. Infertility among Indian Women: Emerging Evidence and Need for Policy Measures.
12. Zargar AH, Wani AI, Masoodi SR, Foway BA. Epidemiologic and etiologic aspects of primary infertility in the Kashmir region of India. Fertility And Sterility 1997 Oct;68(4):687-643.
13. Philippov OS, Radionchenko AA, Bolotova VP, Voronovskaya NI, Potemkina TV. Estimation of the prevalence and causes of infertility in western Siberia. Bull World Health Organ 1998;76(2):183-7.
14. Abbas A, Seyed MS, Nasim T. The epidemiological and etiological aspects of infertility in Yazd province of Iran . Iranian Journal of Reproductive Medicine 2009 September ;7(3):117-122.
15. Obuna JA, Ndukwe EO, Ugboma HAA, Ejikeme BN, Ugboma EW. Clinical Presentation of Infertility in an Outpatient Clinic of a Resource Poor Setting, South-East Nigeria.



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16. Chhabra S, Srujana D, Annapurna MA. Health Seeking Practices of Infertile Women. The Open Reproductive Science Journal, 2012, 4:10-16