pISSN 2394-6032 | eISSN 2394-6040

Original Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20183064

Prevalence and sociodemographic covariates of infertility in Allahabad district

Samreen Kazmi*, Shiv Prakash, Khurshid Parveen, Shama Shaikh, Gyan Prakash

Department of Community Medicine, Moti Lal Nehru Medical College, Allahabad, Uttar Pradesh, India

Received: 23 April 2018 Accepted: 29 May 2018

*Correspondence:

Dr. Samreen Kazmi, E-mail: samreenkazmi.kazmi@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Childbearing is an extremely important event in every human's life and is strongly associated with the ultimate goals of completeness, happiness and family integration. Infertility also has important demographic and health implications. The World Health Organization (WHO), using a two year reference period, defines primary infertility as the lack of conception despite cohabitation and exposure to pregnancy and secondary infertility is defined as the failure to conceive following a previous pregnancy despite cohabitation and exposure to pregnancy (in the absence of contraception, breastfeeding or postpartum amenorrhea) for a period of two years.

Methods: The study was conducted for a period of one year in randomly selected rural and urban areas of Allahabad district of Uttar Pradesh. Multistage random sampling was done and sample size was calculated out to be 844. Data was collected on a predesigned and pretested questionnaire. Various socio-demographic covariates of infertility were also found.

Results: Prevalence of infertility in Allahabad was 8.53%, 11.85% in urban area and 5.21% in rural area. Overall prevalence of primary infertility was 4.98% and secondary infertility was 3.55%. Age of female at the time of marriage, educational and working status of female and socioeconomic status of the couple was found to be significantly associated with infertility.

Conclusions: Prevalence of infertility was higher in urban area and overall prevalence of primary infertility was higher as compared to secondary infertility.

Keywords: Infertility, Prevalence, Covariates of infertility

INTRODUCTION

Fertility is mostly taken as an integral part of womanhood. The inability to bear children is a tragedy for many couples, bringing a sense of loss, failure, and exclusion. Over population has always been the prime problem of developing countries like India forcing toward birth control. Industrial revolution improved quality of living and increased longevity. While developmental processes are in full swing at one angle, fertility is fast declining at the other angle due to the modern lifestyle and usage of chemicals which impair reproduction. Infertility has been relatively neglected as

both a health problem and a subject for social science research in South Asia, as in the developing world more generally.

Infertility is a global health issue, affecting approximately 8-10% couples worldwide.² World Health Organization (WHO) estimates that 60 to 80 million couples worldwide currently suffer from infertility.³ As per study, published at the end of 2012 by WHO, one in every four couples in developing countries had been found to be affected by infertility.⁴ There are no reliable global estimates for prevalence of infertility. Approximately 10% of the world's population suffers from infertility.⁵

Infertility prevalence is highest in South Asia, sub-Saharan Africa, North Africa and the Middle East, central and Eastern Europe, and central Asia. The incidence of female infertility is rising and varies from 10 to 20%.

Until recently, very few studies have understood the patterns and consequences of infertility in India. Family planning programs in India also viewed exclusively the patterns and determinants of over fertility rather than infertility. In India, the burden of primary infertility among couples ranged between 4 to 17 percent. ^{8,9} In 1981, approximately 13 percent of ever-married women of reproductive age were childless, which increased to nearly 16 percent in 2001. According to district level household and facility survey carried out in India during 2007–08, within India, women's infertility rate was the highest in West Bengal (13.9 percent) and the lowest in Meghalaya (2.5 percent). The infertility rate in Uttar Pradesh was found 10.14 percent. ¹¹

The magnitude of the problem calls for urgent action, particularly when in the majority of cases the infertility is avoidable. Though a large number of women are affected with infertility, very few field based epidemiological studies have been undertaken to find out the prevalence and correlates of infertility and the data available is very scarce especially in Uttar Pradesh. Keeping all these facts in mind the study was done with the following objectives:

- To find out the prevalence of infertility in Allahabad
- To study the covariates of infertility.

METHODS

It was a cross-sectional study conducted among the eligible couples (15-45 years) of randomly selected villages and colonies of rural and urban areas of Allahabad district respectively during the period October, 2016 to October 2017. All those couples who had been married for atleast two years and were willing to participate and co-operate were included in the study. Couples who conceived following treatment for infertility and those who were using contraception were excluded from the study.

Sample size was calculated out to be 844. Multistage random sampling was done. In the first stage, Allahabad district was divided into four quadrants and listing of various blocks and wards was done. In the second stage, one block and one ward was selected randomly from each quadrant. In the third stage 1 colony per ward & 1 village per block were randomly selected. Finally the households of colonies and villages were visited and eligible couples were interviewed

Method of data collection

In the selected villages and colonies house to house survey was done and study couples were identified for collection of data. For proper response and full participation the head of the family was also explained about the study. Study subjects were explained in detail about the purpose and objective of the study. Informed consent was obtained and they were ensured about confidentiality of all information. All those couples fulfilling the eligibility criteria were included in the study. WHO explains primary infertility as inefficiency to conceive after two years of unprotected sex and secondary infertility as the inability to conceive a child following previous pregnancy after two years of regular sexual intercourse, without contraception, breastfeeding or postpartum amenorrhea. Accordingly prevalence of infertility was estimated in the study population and detailed information was collected on a predesigned and pretested questionnaire.

Statistical analysis

Data was collected and entered into data sheet of the Statistical Package for the Social Sciences (SPSS) version 21. Data was analysed and statistically evaluated by using chi square and student t test.

RESULTS

In this study of 844 study couples surveyed, 72 couples were found infertile. Thus overall prevalence of infertility in Allahabad was 8.53%, 11.85% in urban area and 5.21% in rural area (Table 1). The prevalence of infertility was found significantly higher in urban areas (p=0.0006).

Table 1: Fertility status of the study couples according to their area of residence.

Fertility Status	Urban area (N=422)	Rural area (N=422)	Total (N=844)
Status	n (%)	n (%)	n (%)
Infertile	50 (11.85)	22 (5.21)	72 (8.53)
Fertile	372 (88.15)	400 (94.78)	772 (91.47)

Primary and secondary infertility

Overall prevalence of primary infertility was 4.98% and secondary infertility was 3.55%. Prevalence of primary infertility was higher in urban areas and in rural areas secondary infertility was higher (Table 2).

Table 2: Prevalence of Infertility among the study couples.

S. No.	Type of infertility	Urban area (N=50) n (%)	Rural area (N=22) n (%)	Total	
1	Primary	36 (8.53)	6 (1.42)	42 (4.98)	
2	Secondary	14 (3.32)	16 (3.79)	30 (3.55)	
p=0.00	p=0.0004.				

Covariates of infertility

Age of females

Maximum proportion of infertility was found in females who were aged between 25-35 years (Table 3, s.no. I).

Age of females at the time of marriage

Maximum (47.06%) proportion of infertility was seen in those females who were married after 30 years of age (Table 3, s.no. II).

Religion of the couples

It was observed that more proportion 67 (9.36%) out of 716, of infertility was found in couples following Hinduism as compared to those following Islam 5 (4.03%) out of 124. No association was found between infertility and religion of the couple (Table 3, s.no. III).

Educational status of the female

Association between infertility and education status of female was found statistically highly significant (Table 3, s.no. IV).

Working status of the female

Among the females who were employed infertility was found in 17.39% of the couples (p=0.0001) (Table 3, s.no. V).

Socioeconomic status of study couples

Maximum proportion of infertility was seen among couples belonging to Upper (16.67%) and Upper Middle class (16.95%) (Table 3, s.no. VI).

Mean age of females at the time of marriage

Mean age of females at the time of marriage was significantly higher in infertile females (Table 4).

Table 3: Socio-demographic covariates of infertility.

S.No.	Variables		Infertile couples n (%)	Fertile couples n (%)	P value
I Age o		15-25 (54)	5 (3.25)	149 (96.75)	0.029
	Age of females	26-35 (473)	48 (10.15)	425 (89.85)	
		36-45 (217)	19 (8.76)	198 (91.24)	
		15-20 (318)	13 (4.09)	305 (95.91)	<0.0001
	Age of females at the time	21-25 (442)	31 (7.01)	411 (92.99)	
II	of marriage	26-30 (67)	20 (29.85)	47 (70.14)	
		31-35 (17)	8 (47.06)	9 (52.94)	
		Hinduism (716)	67 (9.36)	649 (90.64)	_
III	Religion of couple	Islam (124)	5 (4.03)	119 (95.97)	0.121
		Christianity (4)	0 (0.00)	4 (100.00)	
		Illiterate (259)	14 (5.41)	245 (94.59)	<0.0001
		Primary (211)	10 (4.74)	201 (95.26)	
		Secondary (149)	13 (8.72)	136 (91.28)	
IV	Educational status of females	High school (87)	13 (14.94)	74 (85.05)	
		Intermediate (88)	14 (15.91)	74 (84.09)	
		Graduation (35)	4 (11.43)	31 (88.57)	
		PG (15)	4 (26.67)	11 (73.33)	
T 7	VV 1-1 4- 4 6 6 1	Unemployed (706)	48 (6.80)	658 (93.20)	0.0001
V	Working status of females	Employed (138)	24 (17.39)	114 (82.61)	
	Socioeconomic status of the couple	Upper class (48)	8 (16.67)	40 (83.33)	0.024
VI		Upper middle class (59)	10 (16.95)	49 (83.05)	
		Middle class (256)	19 (7.42)	237 (92.58)	
		Upper lower class (327)	22 (6.73)	305 (93.27)	
		Lower class(154)	13 (8.44)	141 (91.56)	

Table 4: Comparison of mean age of females at the time of marriage in infertile and fertile group.

	Group	No.	Mean	Std. deviation
Age at the time of	Infertile	72	25.5138	4.2992
marriage	Fertile	772	21.1541	3.3395

t= 10.3125, df= 842, p<0.0001.

DISCUSSION

In this study the overall prevalence of infertility was found to be 8.53%. In urban areas the prevalence of infertility was 11.85% while in rural areas it was 5.21%. Overall prevalence of primary infertility was 4.9% and secondary infertility was 3.6%. Prevalence of primary infertility was higher in urban areas while prevalence of secondary infertility was higher in rural areas. Similarly, according to district level household and facility survey 2007-08, prevalence of infertility in Uttar Pradesh was found to be 10.14%. Also Mahanta in a cross-sectional study conducted in Assam found the prevalence of infertility to be 10.82% with primary infertility being 6.4% and secondary infertility being 3.01%. ¹²

In our study, age of females at the time of marriage, educational and working status of females and socioeconomic status of the couples were found to be associated with infertility and this association was found statistically significant (p<0.05). Similarly, Saoji found that about 68.7% of infertile females married after the age of twenty five as compared to 31.2%, control with an estimated odds ratio OR of 4.2 (95% CI 2.45-7.25). 13 Similarly, Shamila et al observed that educational status was the most important variable and women with secondary school education and above had markedly lower average fertility (p<0.01) than the less educated. 14 Parvez et al also found significant association of occupation and infertility among the rural women of Andaman Islands. 15 Sarkar et al secondarily analysed the data of third round of District Level Household and facility Survey, 2007-2008, and found that infertility rate was higher among women who were engaged in employment sector. It Similar to the findings of our study, Valsangkar et al also found that a higher socio-economic status was significant for outcome of infertility. 16 Adamson et al in his study among young females (15-30 years) of Mysore, also reported that the mean monthly family income of the infertile group was higher than among the fertile group (p<0.05).

CONCLUSION

The prevalence of infertility was found to be higher in urban areas. Infertility was found to be associated with age of females at the time of marriage, educational and working status of females and socioeconomic status of the couple. Delaying marriage and childbearing may be more common among professionals and other higher-income groups, making them more vulnerable to the cumulative effect of causes of infertility, including the effect of aging.

As the focus of public health policies and programs has always been on containing population growth the inability to procreate has not traditionally made it to the priority list. Therefore, some amount of attention should be given to this problem also.

ACKNOWLEDGEMENTS

We are thankful to all the study participants for their participation in the study.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- 1. Sharara FI, Seifer DB, Flaws JA. Environmental toxicants and female reproduction. Fertil Steril. 1998;70:613-22.
- Kumar D. Prevalence of female infertility and its socioeconomic factors in Tribal communities of Central India. Rural and Remote Health. 2007;7:456.
- 3. Sciarra J. Infertility: an international health problem. Int J Gynaecol Obstet. 1994;46:155-63.
- World Health Organization, Special Programme Of Research, Development and Research Training In Human Reproduction. Ninth annual report, Geneva.
- 5. Ashraf Direkvand-Moghadam et al. The global trend of infertility: an original review and meta-analysis. Int J Epidemiological Res. 2014;1(1):35-43.
- Maya N Mascarenhas. Trends in primary and secondary infertility prevalence since 1990: a systematic analysis of demographic and reproductive health surveys. The Lancet. 2013: 381.
- 7. Romero R, Romero G, Abortes I, Medina G. Risk factors associated to female infertility. Ginecol Obstet Mex. 2008;76(12):717-21.
- 8. Rutstein SO, Iqbal HS. Infecundity, Infertility, and Childlessness in Developing Countries. Calverton, Maryland, USA: ORC Macro and the World Health Organization; 2004 Sept. 74 DHS Comparative Reports No.: 9.
- 9. Unisa S. Childlessness in Andhra Pradesh, India: Treatment-seeking and consequences. Reprod Health Matters. 1999;7(13):54-64.
- Ram U. Childlessness and its consequences in India: Levels, patterns and Differentials. Final Report. International Institute for Population Sciences, Mumbai, India; 2006: 308.
- 11. Sarkar S, Gupta P. Socio-Demographic Correlates of Women's Infertility and Treatment Seeking Behavior in India. J Reprod Infertil. 2016;17(2):123-32.
- 12. Mahanta P. A Clinico-Epidemiological Study Of Infertile Couples Among The Suburban/Rural Population Of Bokakhat, Assam. J Evol Med Dent Sci. 2016;5(24):1296-9.
- 13. Saoji AV. Primary Infertility Problems Among Female Have Been A Source Of Concern In India Lately. Innovative J Med Health Sci. 2014;4(1):332-40.

- Shamila S, Sasikala SL. Primary Report on the Risk Factors Affecting Female Infertility in South Indian Districts of Tamil Nadu and Kerala. Indian J Community Med. 2011;36(1):59-61.
- 15. Parvez R, Sugunan AP, Saha MK. Prevalence of Infertility and Its Socio-Economic Determinants among the Rural Women of Andaman Islands, India. IOSR J Dental Med Sci. 2016;15(4):39-41.
- 16. Valsangkar S, Bodhare T, Bele S, Sai S. An evaluation of effect of infertility on marital, sexual satisfaction and health related quality of life in women. J Human Reprod Sci. 2011;4(2):80-5.
- 17. Adamson PC, Krupp 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;134:440-6.

Cite this article as: Kazmi S, Prakash S, Parveen K, Shaikh S, Prakash G. Prevalence and sociodemographic covariates of infertility in Allahabad district. Int J Community Med Public Health 2018;5:3372-6.