International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

Prevalence of Infertility among School Teachers of Urban Belagavi - A Cross-Sectional Study

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Received: 08/07/2015 *Revised: 14/08/2015* *Accepted: 19/08/2015*

ABSTRACT

Background: Infertility has become a global health issue for both developed as well as developing countries. It is a source of physical, mental, social and economical stress to people who are suffering from it. Factors like occupational hazard, sedentary life style, infection (virus, bacteria and toxins), food habits, smoking, alcohol, some medications, heat exposure, contraceptive usage and late marriage etc significantly contribute to infertility.
Objective: To know the prevalence of infertility among school teachers and socio- demographic and risk factors contributing to infertility.
Methods: A cross sectional study was conducted for a period of nine months in Belagavi city among 490 school teachers. Pre-designed and pre-tested questionnaires were used to collect information regarding socio-demographic factors and other risk factors causing infertility. Anthropometric measurements like Height and Weight had been taken.
Result: The prevalence of infertility among teachers was found to be 9.6% i.e. 47 teachers were infertile among 490 participants in the study. Female factor was found to be high in this study (48.9%).
Conclusion: This study has proven that prevalence of infertility was higher among school teachers. Medical condition like thyroid was more common among participants. Amongst the causes of infertility, female factor was found to be more.

Key Words: Infertility, School teachers, Prevalence, Belagavi city.

INTRODUCTION

Bearing children and raising them is strongly related with completeness, happiness and family integration in human life but for people who are deprived of this beautiful process of reproduction, infertility has become a source of health issue in terms of physical and mental stress. [1] Infertility is common in both male and female yet it not being a life threatening disease like cancer and AIDS couple do not worry that he/she is infertile unless and until they attempt to conceive. [2] Infertility is defined as inability of couples to conceive or bear child when desired.

WHO defines Primary infertility as couple had never conceived despite cohabitation and exposure to risk of pregnancy for a period of 2 years and secondary infertility as failure to conceive

following pervious pregnancy despite of cohabitation and exposure to the risk of pregnancy (in absence of contraception, breastfeeding or post partum amenorrhea) for a period of 2 years. [3] According to WHO this definition was drawn from scientific group of epidemiology which as used 2years as reference period. [3]

According to WHO, 8-10 % of couples are suffering from infertility i.e. 50-80 million people globally? USA has approximately 5 million people suffering from infertility, Europe has incidence of 14%, where as West African communities is 50%. In developed countries infertility ranges from 3.5% to 16.7 % and in less developed countries it is 6.9% to 9.3%. [1]

Mascarehas et al mentioned in their study that according to Demographic Health Survey of 2005 of India prevalence of primary infertility among 71095 samples was 2.7 % and secondary infertility among 22740 samples was 24.6%. [4]

State wise percentage of infertility in India varies according to different region as for Uttar Pradesh it was 3.7%, Andhra Pradesh was 5% and Kashmir was 15%, similarly it again varies across tribes and casts within the same region. [5]

According to DLHS survey in Karnataka, women who had primary and secondary infertility was found 5.9 and 1.7 percent respectively of ever-married women between 15-49 years. Infertility in rural area is 6.1 percent as compare to urban area, which is 5.5 percent. [6]

Causes that attribute to infertility may be biological or social. Social factors like stress due to economic status, religious attitude, age at marriage, urbanization leading to modernization, higher literacy, contraceptive usage etc plays role in lowering fertility. [7] Sexually transmitted infections are leading preventable cause for infertility in developing countries. [8]

Occupational hazards, sedentary life style, infections (virus, bacteria, and toxins), food habits, consumption of animal fat, smoking, alcohol, some medications heat exposure etc significantly contribute in infertility. [8]

It was observed that infertility was more among school teachers in private infertility clinic setup of Belagavi city, which was found to be around 10% after calculation. With this background and hypothesis, the present study was carried out to find prevalence of infertility among school teachers of urban area of Belgaum city of Karnataka and to know socio demographic and risk factors contributing to it.

MATERIALS AND MEHODS

A cross sectional study was conducted among 490 school teachers of reproductive age (20-44 years) from February- October 2014 in Belagavi city. Predesigned and pretested questionnaire was given to participants to collect information regarding their fertility status and infertile participants were further administered questionnaires to know their socio-demographic factors and risk factors responsible for infertility. Anthropometric measurements like height and weight of the participants was taken. Sample size was calculated as 490 using the formula $4pq/d^2$ (where 'p' was taken as 7.6% as per DLHS survey 07-08). Schools which were registered under Block Education Office were taken for study and selection was done using computerized Random number table to recruit participants. Married teachers of reproductive age (20-44yrs) and newly married couples were included in the study and person who refused to participate were excluded from the study. Written informed consent was obtained from all participants, informed consent was translated into local language i.e. Kannada and Marathi, and

ethical clearance was obtained from Institutional Ethical committee, JNMC, KLE University, Belagavi. Pilot study was conducted prior to the study. Calibration of instrument was taken into consideration during study. All the data were entered into SPSS (IBM trial version 20) and analyzed by applying descriptive statistics (Chi-square and Percentage).

RESULTS

Table no.1:- Distribution of participants as per their socio demographic parameters.

Variables		No. of participants				Total N (%)	Chi-square (p value)
		Infertile		Fertile			
		N	%	N	%		
	25-29	16	21.6%	58	78.4%		χ^2 =2.185, df = 4 (p value=0.000)
	30-34	8	7.8%	95	92.2%		
	35-39	13	9.8%	119	90.2%		
sex	Male	4	5.5%	69	94.5%		χ^2 =1.673, df = 1 (p value=0.196)
	Female	43	10.3%	374	89.7%	490(100%)	
Family type	Nuclear	38	9.1%	380	90.9%		χ^2 =0.832, df = 1 (p value=0.364)
	Joint	9	12.5%	63	87.5%	490(100%)	
Socio economic status	I	28	7.9%	325	92.1%		χ^2 =12.296, df = 3 (p value=0.006)
	II	11	10.4%	95	89.6%	490(100%)	
	III	5	27.7%	18	78.3%		
	IV	3	37.5%	5	62.5%		
Religion	Hindu	35	9.9%	317	90.1%		χ^2 =2.556, df = 3 (p value=0.465)
	Muslim	7	11.5%	54	88.5%	490(100%)	
	Christian	5	8.9%	51	91.1%		
	Others	0	.0%	21	100%		
TOTAL		47	9.1%	443	90.4%	490(100%)	

490 participants were included in the study. Amongst them, 47(9.6%) were infertile, majority of participants belonged to age group of 25-29 years (Table 1). Female participants were more 43(10.3%) compared to male participants (5.5%). Majority of infertile participants belonged to nuclear family 38 (9.1%), 28(7.9%) of the infertile participants belonged to class-1 classification of socio economic status according to B. G. Prasad (2014). Duration of marriage i.e. 4- 6 years was more in 19 (22.9%) participants (Table 2).Very less number of infertile participants used contraceptives 5(2.5%) among which more common was condom 4(7.0%), TTP (Time To Pregnancy) of majority of participants was 1-3years i.e. 26 (55.3%). 39(89.0%) participants had taken treatment for infertility and most of them had taken oral medication as treatment 28(59.6%). Allopathic treatment was taken by majority of participants. Medical condition like thyroid was found in 4(8.5%) participants (Table 2). Most of the female participants had 13years as age of onset of puberty i.e. 32(68.1%), majority of female participants had irregular menses 22(46.8%), 23(48.9%) participants had frequency of coitus as 2 times/week. Only 1(2.1%) participant reported having habit of smoking whereas participants whose spouse had habits like smoking, alcohol etc was 15(31.9%). Alcohol consumption was found among 10 (21.3%), smoking was found among 7 914.9%), tobacco chewing was found in 2(4.3%), Gutkha in 3(6.4%) and Supari in 3(6.4%) participants (Table 3). Majority of the participants had normal BMI i.e. 20 (42.6%). In our study, Female factor was highest i.e. 23(48.9%) among Causes of infertility (Table 2).

Table no. 2 Distribution of participant's according to the factors responsible for infertility

Variables		No. of participants		Total
		N	%	
Duration of marriage	1-3yrs	15	31.9%	47(100%)
	4-6yrs	19	40.4%	
	7-10yrs	6	12.8%	
	>10yrs	7	14.9%	
Use of contraception	Yes	5	89.4%	47(100%)
	No	42	10.6%	
Methods of contraceptives	condom	4	8.5%	47(100%)
	cu-T	1	2.1%	
	None	42	89.4%	
TTP	1-3yrs	26	53.3%	
	4-6yrs	15	31.9%	47(100%)
	7-10yrs	4	8.5%	
	>10yrs	2	4.3%	
Treatment taken for infertility	Yes	39	83.0%	47(100%)
	No	8	17.0%	
Type of treatment taken for infertility	oral medication	28	59.6%	47(100%)
	tubal patency test	1	2.1%	
	IUI	3	6.4%	
	Laparoscopy	7	14.9%	
	Not done anything	8	17.0%	
Reason for not taking treatment	Treatment not required	6	12.8%	47(100%)
	Financial problem	1	2.1%	
	No Family support	1	2.1%	
	Not applicable	39	83.0%	
Treatment taken by spouse	Yes	22	46.8%	47(100%)
	No	25	53.2%	
System of treatment taken	Allopathic	36	76.6%	47(100%)
	Ayurvedic	3	6.4%	
	Not applicable	8	17.0%	
Any other medical condition participants had	Yes	8	17.0%	47(100%)
	No	39	83.0%	
Type of Medical condition participants had	Asthma	1	2.1%	47(100%)
	Diabetes	1	2.1%	
	Hypertension	1	2.1%	
	Thyroid	4	8.5%	
	No medical condition	40	85.1%	
Any other medical condition participants spouse had	Yes	4	8.5%	47(100%)
	No	43	91.5%	
Type of condition participants spouse had	Epilepsy	1	2.1%	47(100%)
	Diabetes	1	2.1%	
	Hypertension	2	4.3%	
	No medical condition	43	91.5%	
BMI	Normal	20	42.6%	47(100%)
	Overweight	16	34.0%	
	Obese	11	23.4%	
causes of infertility	Male factor	23	48.9%	47(100%)
	Female factor	9	19.1%	
	Hereditary	3	6.4%	
	Unknown	12	25.5%	

(Note:- χ^2 = chi-square, df = degree of freedom)

Table no. 3 Sexual history of participants and Habits

Variables		No. of participants		Total
		N	%	
Age at menarche	13yrs	32	68.1%	47(100%)
	14yrs	5	10.6%	
	15yrs	5	10.6%	
	>15yrs	1	2.1%	
	Not applicable	4	8.5%	
Menstrual history	Regular	20	42.6%	47(100%)
	Irregular	22	46.8%	
	Premature menopause	1	2.1%	47(100%)
	Not applicable	4	8.5%	
Frequency of coitus	Daily	2	4.3%	
	1 time/week	15	31.9%	47(100%)
	2 times/week	23	48.9%	
	4-5 times/week	7	14.9%	
Any habits participants had	Yes	1	2.1%	47(100%)
	No	46	97.9%	
Any habits participants spouse had	Yes	15	31.9%	47(100%)
	No	32	68.1%	
Types of habit				47(100%)
Alcohol	Yes	10	21.3%	
	No	37	78.7%	
Smoking	Yes	7	14.9%	
	No	40	85.1%	
Other habits				
Tobacco chewing	Yes	2	4.3%	47(100%)
Gutkha	Yes	3	6.4%	
Supari	Yes	3	6.4%	
Not having any of this habits	------	39	83.0%	

(Note: '*Not Applicable'* includes male participants in the study)

DISCUSSION

In our study among 490 participants, 47(9.6%) were found infertile. Among them majority of participants belonged to age group of 25-29yrs, female participants were more 43(10.3%) compared to male 4(5.5%). A study conducted in Bangalore, Kumbalgodu primary health centre showed that majority of male were manifesting primary infertility at age of 25-29yrs whereas female manifested primary infertility at age of 20-24 years. [9] In our study, 28(7.9%) of infertile participants belonged to Nuclear family. A study conducted in Bangalore, Kumbalgodu primary health centre revealed that out of 2568 eligible couples who belonged to nuclear family, 41(1.06%) of them had infertility. [9] According to our study, the duration of marriage for majority of infertile participants was 4- 6 yrs. A study conducted in central India showed that the duration of marriage of the participants who were Khairwar was 14.9 yrs which was greater than the mean marriage duration of Non-khairwar. [3]

We found in our study that very less number of infertile used contraceptives 5(2.5%). A study conducted in South Indian districts of Tamil Nadu and Kerala showed that there was minimum usage of contraceptives showing negative correlation between infertility and usage of contraceptives. [7] TTP of majority of participants in our study was 1-3yrs i.e. 26(55.3%). A study conducted in Peshawar, Pakistan showed duration of participants having 10 years of infertility was 72.41% and more than 10 years duration was 27.49. [11]

Majority of female participants had irregular menses 22(46.8%) whereas a study conducted in South Indian districts of Tamil Nadu and Kerala showed that menstrual irregularities was reported among infertile females in 3 study area (40%,44.85%,

44.11%) respectively and it was positively correlated with female infertility ($p<0.001$). [7] In our study among participants and their spouses, alcohol consumption was found to be 21.3%, smoking was found among 7 (14.9%), tobacco chewing was found in 2(4.3%), gutkha in 3(6.4%) and supari in 3(6.4%). A study conducted in Bangalore, Kumbalgodu primary health centre showed that 52.94% of male participants who had primary infertility were both smoker and alcoholic, 35.29% male only consumed alcohol and 11.76 % males were smokers. [9]

In our study major cause of infertility was female factor 23 (48.9%). A study conducted in Indore, India showed unexplained factor as 370(37%), male factor 195 (19.5%), female factor 302(30.2%). [10]

CONCLUSION

This study has proven that prevalence of infertility was higher among school teachers. Female factor was major cause of infertility in this study medical condition like thyroid were found more common

LIMITATION

Due to time constraint, very less population was chosen for study. Extensive study should be conducted on larger number of population to know causal relation between infertility and teachers. As there is no scale to measure infertility, there may be some bias in the study. In future accurate scale to measure infertility should be developed.

RECOMMENDATION

Teachers have more stress, thus emphasis should be made to reduce stress level through some stress management techniques. Infertility clinic time schedule should be planned in such a way that teachers who are having busy schedule can make up for their visits. Government should implement such set-up in CHCs which can provide infertility treatment at minimal cost for those who cannot afford private hospital treatment. Education regarding available techniques and treatment for infertility should be made among community members to avoid stigma related to infertility. Further intensive studies should be done to know causal factors which may be responsible for infertility among teachers.

ACKNOWLEDGEMENT

The authors are thankful to all the principals of schools who permitted to conduct the study as well as all the participants for their cooperation during the study.

Conflict of Interest: None declared.
Source of Funding: Nil.

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How to cite this article: Jaywant OM, Patted SS, Angolkar M et al. Prevalence of infertility among school teachers of urban Belagavi - A cross sectional study. Int J Health Sci Res. 2015; 5(9):403-409.

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