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An epidemiological study of infertility among urban population of Ambala, Haryana

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Abstract

Infertility affects relatively large number of couple both globally as well as in India. There are sparse data on the prevalence of infertility in India. This study describes the correlates and prevalence of infertility among couples in Ambala, India. This study is a cross sectional study done in the urban field practice area of M. M. Institute of Medical Sciences & Research, during January 2013 to December 2013. Couples having infertility were identified using WHO definition by house to house survey and interviewed to know various epidemiological correlates including demographic characteristics, etiology and treatment if taken for the same. There were total of 4456 eligible couples and 534 were found to be having primary or secondary infertility. The study showed that among eligible couples prevalence of primary infertility was 6.1%, while secondary infertility was 5.7%. Among couples with primary infertility male factors were responsible in 49(17.95%), female factors in 86(31.5%) & both partners were accountable in 66(22.34%) while 77(28.21%) couple cause of infertility was unexplained. In women with primary infertility ovulatory factor was commonest cause while in secondary infertility tubal blockage & pelvic inflammatory disease (PID) were equally responsible. It was concluded that this study has provided significant information concerning the prevalence of infertility in our area & has informed about different demographical & etiological factors associated with infertility

Key words: - primary infertility, secondary infertility, eligible couple, ovulatory factor, PID, tubal blockage

Introduction

Infertility is a global health issue, affecting approximately 8-10% couples worldwide.^{1,2} The World Health Organization (WHO) estimates that 60 to 80 million couples worldwide currently suffer from infertility.³ The WHO estimates of primary infertility in India are 3.9 % (age-standardized to 25-49 yr) and 16.8 % (age-standardized to 15-49 yr), using the “age but no birth” definition.² 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 The magnitude of the problem calls for urgent action, particularly when in the majority of cases the infertility is avoidable. Estimates of infertility vary widely among Indian states from 3.7 % in Uttar Pradesh, Himachal Pradesh and Maharashtra, to 5 % in Andhra Pradesh and 15 % in Kashmir.⁵⁻⁷

Infertility is not merely a health problem, it is also a matter of social injustice and inequality.¹ Infertility can have a serious impact on both the psychological well-being and the social status of women in the developing world. As a result of their infertile status, they suffer physical and mental abuse, neglect, abandonment, economic deprivation and social ostracism as well as exclusion from certain social activities and traditional ceremonies.⁸

Infertility is divided into primary and secondary infertility. Definitions of primary infertility vary between studies, but the operational definition, put forth by the WHO, defines primary infertility as the “Inability to conceive within two years of exposure to pregnancy (i.e.- sexually active, non-contracepting, and non-lactating) among women 15 to 49 yr old”. Secondary infertility refers to the inability to conceive following a previous pregnancy.⁹ Both partners in relationship contribute to potential fertility and both may be sub fertile. The female factors contribute almost half in the etiologies of infertility followed by male factors (30-40%), and the rest are attributed to a mixture of both or by problems unknown.¹⁰ The biological and social factors including stress due to economic status, religious attitudes, age at marriage, urbanization leading to modernization, higher literacy, contraceptive usage and nuclear families play a significant role in lowering fertility.¹¹ Sexually transmitted infections (STIs) are generally considered the leading preventable cause of infertility worldwide, especially in developing countries.¹²

In India where, traditionally, having children is mandatory in terms of family happiness and many people still think of infertility as a "woman's problem", this problem acquires crucial social actuality. Thus the purpose of the study is to identify and quantify some risk factors for infertility in Ambala.

Material and method

The present cross sectional study was conducted in the urban field practice area of MMIMSR from January 2013 to December 2013. Health services in this area are provided by urban health centre which is located at 25 km from the Institute and caters to a population of more than 32186. The demographic profile of whole of the population is maintained in the centre in the form of family folders. Separate record of eligible couples is also there in the centre. List of all the eligible couples was taken from the centre and they were further contacted to collect the desired data. Female health workers were trained to interview the female counterparts of the couples. Couples having infertility were identified using WHO definition by house to house survey and interviewed to know various epidemiological correlates including demographic characteristics, etiology and treatment if taken for the same. There were total of 4456 eligible couples and 534 were found to be having primary or secondary infertility. Females eligible for the study were interviewed as per the prestructured questionnaire after taking their consent to participate. Females who could not be contacted during first visit were revisited. Those who were not available during 2nd visit were excluded along with who refused to participate.

The study was approved by institutional ethical committee. The data collected was entered in excel sheet and analyzed using SPPSS software version 20.

Results

In our study Out of 4456 eligible couples 534 (11.98%) were found to be infertile. 528 couples were included as 6 couples were not available even during 2nd visit. Mean age of wife's was 33.19 ± 5.46 (range: 22-45 yr), while husband's mean age was 37.5 ± 5.82 (range: 24-52 yrs). Majority of the participants were 31-35 yrs age group (33.5% husbands & 32.4% wife).

Among eligible couples prevalence of primary infertility was 6.1% , while secondary infertility was 5.7%.(table II)

Both types of infertility were most prevalent in middle income group (primary 42.8%, secondary 44.3%). A woman reaches her maximum fertility potential at the age of 30.so both types of infertility was common if woman marries late (>30). Primary infertility was observed frequently in first 5 yrs of marital life while secondary infertility was prevalent in couples married for 10-14 yr duration. Although in secondary infertility group it was observed that 94(36.86%) were having difficulty in conceiving for < 5 years period. (Table III)

As depicted in table IV majority of cases with infertility had normal menstrual cycles while women with secondary infertility had oligomenorrhea as commonest menstrual pattern.

Table V shows that out of total 528 couples only 195 couples accepted they had earlier received any treatment. 47.05% Secondary infertility couple had approached for treatment of infertility, while only 27.47% of couples with primary infertility received any treatment before the study. As per the records available at the time of visit 56 couples with primary infertility got only their basic investigations done but did not received any treatment, while 17 patients had already received medical treatment & only 2 couples were surgically treated for infertility. While in secondary infertility group 72 couples were investigated earlier for infertility, 35 were already taking medical treatment & 13 had undergone surgery for infertility treatment.

Table VI shows different underlined causes for infertility. Among couples with primary infertility male factors were responsible in 49(17.95%), female factors in 86(31.5%) & both partners were accountable in 66(22.34%) while 77(28.21%) couple cause of infertility was unexplained as both partners were normal. In women with primary infertility ovulatory factor [43(15.75%)] was commonest cause for infertility followed by tubal blockage [31(11.36%)].

While amongst secondary infertility group 34(14.9%) males had semen abnormalities, female factors were responsible in 136 (53.33%) couples & both partners in 44(17.25%), while 37 (14.51%) couples were diagnosed to have unexplained infertility. it was observed that tubal blockage & pelvic inflammatory disease (PID) lead to infertility in approximate 20% couples

Discussion

Prevalence of infertility in our study was 11.98% which is similar to the findings of Kumar D¹ & Adamson PC¹², prevalence of primary infertility in our study was 6.1% Chethana R¹³ reported 4.5% prevalence. Mean age of wife's was 33.19 ± 5.46 (range: 22-45 yr), while husband's mean age was 37.5 ± 5.82 (range: 24-52 yrs) which was older than reported by Adamson PC¹². Similar to earlier studies most of the participants were 31-35 yrs age group (33.5% husbands & 32.4% wife)¹⁴. Similarly a survey conducted across nine cities including 2,562 patients by 'Helping families' endorsed by the Indian Society for Assisted Reproduction (ISAR) reported that about 46% of Indians in the age group of 31 to 40 years seeking medical help for conceiving a child were found to be infertile¹⁵ While studies from Indian researchers report lower age for infertility^{12,13, 16} Although infertility was assumed to be a disease of affluent society majority of couples sufferings with infertility belonged to middle income group^{1,12 &16}. In present study most of primary infertility couples were from medium socioeconomic status which is similar to study conducted by Aflatoonian A et al.¹⁴

Out of 528 infertile couples 273 (51.7%) were having primary infertility while 255 (48.3%) had secondary infertility, similar to our findings Zargar et al reported that the magnitude of primary infertility in India was 50%⁷ Age at marriage has been recognized by the policy makers as contributory to fertility. Postponement of marriage results in reduction of the period of fertility significantly, there by shortening the total reproductive span our study supports this as both types of infertility was common if woman marries late (19-29yr). Primary infertility was observed frequently in first 5 yrs of marital life while secondary infertility was prevalent in couples married for 10-14 yr duration similar to prior studies^{13,16}

Study conducted by Shamila S et al¹⁶ on risk factors affecting female infertility in South Indian districts of Tamil Nadu and Kerala opine that there was a positive correlation between infertility and menstrual irregularity. In the present study most common menstrual irregularity was oligomenorrhoea which is similar to study conducted by Dhont N et al¹⁷. our study findings supports it.

In our study it was observed that women with primary infertility ovulatory factor [43(15.75%)] was commonest cause for infertility followed by tubal blockage [31(11.36%)]. Among couples with primary infertility male factors were responsible in 49(17.95%), female factors in 86(31.5%) & both partners were accountable in 66(22.34%) while 77(28.21%) couple cause of infertility was unexplained as both partners were normal. Our results were comparable with earlier report by Aflatoonian A et al.¹⁴ on the contrary according to Chethana R¹³ PID was the commonest cause for female infertility. While it was observed that tubal blockage & pelvic inflammatory disease (PID) lead to secondary infertility in approximate 20% couples these observation are supported by a study done by Q Wani et al¹⁸ The commonest finding by laparoscopy in patients with secondary infertility was tubal occlusion in 5 (27.7%), followed by peritubal and periovarian adhesions.

Conclusion

This study has provided significant information concerning the prevalence of infertility in our area & has informed about different demographical & etiological factors associated with infertility. As infertility treatment is very costly identifying the risk factors may be of benefit to Indian couples. Efforts are needed to raise awareness of the causes and consequences of infertility.

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Table (1) Distribution of couples with infertility by demographic characteristics.(n=528)**Socio demographic:-**

Age	Husband	%	Wife	%
20-25	9	1.7	15	2.8
26-30	48	9.1	120	22.7
31-35	177	33.5	171	32.4
36-40	147	27.8	123	23.3
41-45	147	27.8	99	18.8
Education				
Post graduate or PG	23	4.4	18	3.4
Graduate	75	14.2	60	11.4
Intermediate or diploma	164	31	33	6.3
High school	63	11.9	126	23.9
Middle school	98	18.6	132	25.0
Primary school	51	9.7	60	11.4
Illiterate	54	10.2	99	18.8
Occupation				
Professional	45	8.5	3	0.57
Semi professional	10	1.7	19	3.6
Clerical or shop or farm	189	35.8	15	2.8
Skilled worker	101	18.8	6	1.2
Semi skilled worker	78	14.8	22	4.2
Unskilled	105	19.9	43	8.1
Unemployed	3	.6	420	79.5

Table II: - Type of Infertility

Type of infertility	
Primary	273(6.1%)
Secondary	255(5.7%)

Table III: Data on SES, Age at marriage (wife) and duration of infertility

SES	Primary (n=273)	Secondary (n=255)
Low	47(17.2%)	59(23%)
Middle	117(42.8%)	113(44.3%)
High	109(39.9%)	83(32.5%)
Age at marriage(wife)		
<18 yrs	3(1.1%)	7(2.7%)
19-29	57(20.9%)	41(16.1%)
>30	213(78%)	207(81.2%)
Duration of infertility		
<5 yr	120(43.96%)	94(36.86%)
5-9	21(7.69%)	75(29.4%)
10-14	45(16.48%)	41(16.1%)
>15	87(31.87%)	45(17.65%)

Table IV:- menstrual pattern

Menstrual history	Primary (n=273)	Secondary (n=255)
Normal	113(41.39%)	57(22.35%)
Oligomenorrhea	79(28.93%)	126(49.41%)
Menorrhagia	81(29.67%)	72(28.23%)
Dysmaenorrhea	175	141
H/O amenorrhea	6	18

Table V:- Previous treatment

	Primary	Secondary
Previous treatment	75(27.47%)	120(47.05%)
Type of treatment		
Only investigations done	56	72
Medical treatment	17	35
Surgical	2	13

Table VI :- cause of infertility

cause of infertility	Primary	Secondary
Male factors (oligospermia/ azospermia/ asthenospermia)	49(17.95%)	38(14.9%)
ovulatory factor (anovulation/ PCOD)	43(15.75%)	27(10.59%)
Tubal blockage	31(11.36%)	53(20.78%)
Uterine abnormality	7(2.56%)	5(1.96%)
PID	5(1.83%)	51(20%)
Unexplained	77(28.21%)	37(14.51%)
Both (male & female factors)	61(22.34%)	44(17.25%)