

## Observational Study

# Co-morbid conditions of infertile couples — a community based study

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Infertility is a public health problem affecting people worldwide from all the communities with various causes. In any society being a parent is as a normal assumption of adult life. The crisis of infertility makes the couple undergo a chain of emotional changes which can be harmful to them. There are several co-morbid condition associated with infertility. With increasing age systemic disease were becoming more coincidental, which in turn tend to exert negative effect on feudality and fertility in males and females. (1) To identify the co-morbid condition among infertile couple. (2) To give health education to them.

A cross-sectional study was conducted in the rural and urban field practice area of tertiary care hospital. Complete enumeration of all houses were done to list all the eligible couple residing in the area and among them at risk of pregnancy were identified so as to find out couples with either primary or secondary infertility. After obtaining ethical clearance from the institutional ethical committee, the study was carried out. More than 50% of the study participant had one or the other associated medical and reproductive system diseases, among which major proportion were rural males (18%) and females (15%) followed by urban males (13%) and females (11%). The high proportion of respondents with co morbid condition may be probably due to unhealthy lifestyle, illiteracy and ignorance.

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**Key words :** Infertility, co- morbid conditions, health education

Infertility is a public health problem affecting people worldwide from all the communities with various causes. It has an impact on their physical, mental and social well-being. World Health Organization (WHO) defines infertility as “the inability of a sexually active couple to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse. The epidemiological definition (for monitoring and surveillance) put forth by WHO is women of reproductive age group (15-49years) at risk of becoming pregnant (non-pregnant, sexually active, not using any contraception and not lactating) who report trying unsuccessfully for a pregnancy for two years or more. It may be primary infertility which refers to couples who have never conceived, whereas secondary infertility refers to couples who are unable to conceive after two years of unprotected intercourse following previous pregnancy and not using any contraceptives<sup>1</sup>.

Apart from infertility many other co morbid condition were also observed among the infertile couples may be in the form of medial or reproductive system . The present study was undertaken to identify the co morbid condition

among the infertile couples and also to give health education regarding the identified co morbid conditions.

### Objectives :

- (1) To identify the co-morbid condition among infertile couple.
- (2) To give health education to them

### Material and Methods :

The present study was conducted at Rural Health Training Centre and Urban Health Training Centre, which are the field practice areas of Department of Community Medicine of Shri B M Patil Medical College, Hospital and Research Centre, Vijayapur.

**Study population :** Eligible couple where women is in the reproductive age group 15-49 years.

**Study design :** Cross-sectional study

**Study technique :** Interview technique

**Study Period :** April 2015 – March 2016

**Sample size :** Complete enumeration of all the houses covered under RHTC and UHTC was done to list all the eligible couples residing in the area those women at risk of pregnancy were identified so as to find out couples’ with either primary or secondary infertility. Couples without infertility were considered for the denominator to calculate the prevalence of infertility.

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**Methodology :**

After obtaining ethical clearance from the Institutional Ethical Committee the study was conducted in rural and urban field practice area of Shri B. M. Patil Medical College, Hospital and Research Centre. Medico social workers of RHTC and UHTC, Anganwadi workers and ASHA workers were involved in the study. Objectives were explained to them.

The purpose and overview of the study was explained at the time of the interview, and interviewers were informed that their participation was entirely voluntary, their anonymity would be assured, they could withdraw from the study at any time and the information that they will be providing would be used solely for the purpose of the study. Confidentiality about data and findings were assured to the participants and their consent was taken.

A total of 1800 houses were accessed in rural field practice area catering a population of 12000 and 1200 houses were accessed in the urban field practice area catering a population of 10000. House to house survey was done covering all the participants coming under the field practice area so as to completely enumerate the eligible couples. Among them, women who were exposed to the risk of pregnancy were considered (as denominator to calculate the prevalence) 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<sup>1</sup>.

In this study, BMI classification proposed by the WHO Western Pacific Regional Office in collaboration with IOTF (International Obesity Task Force) steering committee (2000) for Asian people was used. It is also called as Quetlet Index and was used to assess obesity and is computed by

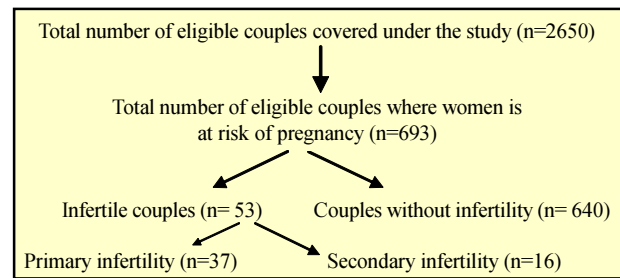
$$BMI = \text{Weight (in kg)} / \text{Height (in meter)}^2$$

Statistical analysis: The data was compiled in Microsoft Excel-2010 work sheet and analyzed using Statistical Package for Social Sciences (SPSS) version 16.0 software.

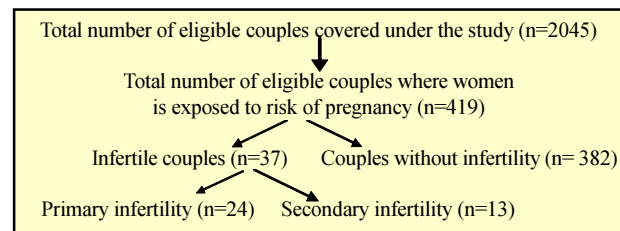
**Results :**

A community based cross sectional study was conducted in the RHTC & UHTC. A total of 1800 houses were covered in RHTC catering a population of 12000 & 1200 houses were covered at UHTC catering a population of 10000.

**Prevalence of Infertility in Rural Area:**



**Prevalence of Infertility in Urban Area :**



The major proportion of the infertile women belonged to Hindu religion both in rural (94%) & urban slum (75%). Comparatively Muslim women were more from urban area (25%) and only 6% were from rural area. Major proportion of the study subjects belonged to joint family (49%) followed by nuclear family (43%) in rural area whereas nuclear type of family (49%) was more among urban residents.

Around 43% and 41% of the participants belonged to class III SES in rural and urban areas respectively. All women belonging to upper socio-economic status were residents of rural area. 36% of the subjects from rural area had duration of infertility 5-9 years and 46% had duration of infertility <5 years in urban area. Family history of infertility was among 16% and 14% of the women in rural and urban areas respectively. History of consanguineous marriage was among 38% in rural and 27% in urban residents (Table 1).

Addictive habits were among 55% and 59% of the rural and urban males respectively. Among which more men in the rural area had the habit of tobacco consumption (62%). Similarly in urban area alcohol consumption was higher ie, 59% when compared to tobacco consumption. Tobacco consumption history among females was also asked which showed very less number (2 in rural and 1 in urban)

The study highlights that majority of the males in rural and urban area were at risk of obesity ie, 49% and 46% respectively. In 15% of the rural males and 24% of the urban males had grade I obesity and 2% of the rural males had grade II obesity. This distribution showed no association.

Variables	Rural Frequency (%)	Urban Frequency (%)
Religion :		
Hindu	50(94)	28(75)
Muslim	03(06)	09(25)
Type of family :		
Joint	26(49)	13(35)
Nuclear	23(43)	18(49)
Three generation family	04(8)	06(16)
SES :		
Class I	06(11)	0
Class II	10(19)	07(19)
Class III	23(43)	15(41)
Class IV	09(17)	12(32)
Class V	05(9)	03(8)
Duration of infertility :		
< 5 years	18(34)	17(46)
5-9 years	19(36)	11(30)
10-20 years	15(28)	07(19)
>20 years	01(2)	02(5)
Family history of infertility :		
Yes	06(16)	05(14)
No	47(89)	32(86)
History of consanguineous marriage :		
Yes	20(38)	10(27)
No	33(62)	27(73)
Total	53(100)	37(100)

13% were at risk of obesity and 8% of them had grade I obesity. This distribution was not found statistically significant (Table 2).

More than 50% of the study participants had one or the other associated medical and reproductive system diseases, among which major proportion were rural males (18%) followed by rural females (15%), urban males (13%) and 11% among urban women (Fig 1).

Related to co-morbid condition, 54% of them had medical disorders and 46% of them were having reproductive system diseases. With respect to the distribution of diseases among males and females, it was seen that major proportion of males from rural area (42%) had medical disorders followed by urban males (24%), urban females (18%) and the least were rural females (16%).

It is highlighted that proportion of reproductive system diseases was highest among rural females (36%) followed by urban females (26%), rural males (23%) and urban males (15%).

The present study found that diabetes was the most common associated disease among the study participants ie, 25% among rural (20% males and 5% in females) and 20% among urban residents (13% males and 7% were females). Hypertension was among 13% and 16% of rural and urban residents respectively. Hypothyroidism was present among 18% of the rural dwellers whereas 7% of

BMI	Males			Females			
	Rural	Urban	Total	Rural	Urban	Total	
Under-weight	<18.5	0	0	0	6(11)	9(17)	
Normal	18.5-22.9	18(34)	11(30)	29(32)	22(41)	41(45)	
At risk of obesity	23-24.9	26(49)	17(46)	43(48)	17(32)	05(13)	
Grade I obesity	25-29.9	08(15)	09(24)	17(19)	5(9)	03(8)	
Grade II	>30	1(2)	0	1(1)	3(6)	0	
Total		53(100)	37(100)	90(100)	53(100)	37(100)	
		$\chi^2=1.85; P>0.05$			$\chi^2=9.91; P>0.05$		

Among rural women 11% were under-weight, 32% were at risk of obesity, 9% of them had grade I obesity and 6% had grade II obesity. Similarly in urban area, 24% of them were under-weight,

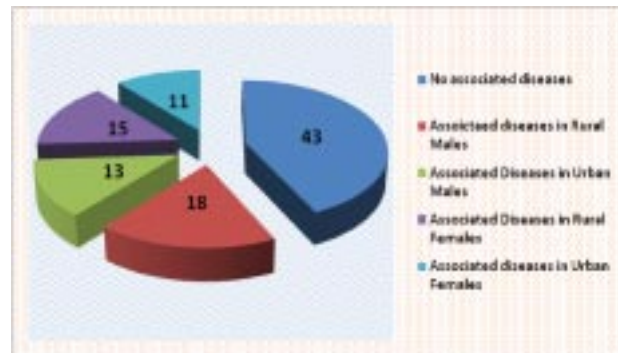


Fig 1 — Proportion of study subjects with co-morbid conditions

the urban study subjects had it. Tuberculosis (11%) was reported only among rural study participants. Complaints of asthma were among 4% and 2% of the rural and urban participants respectively (Table 3).

In males it is observed that urethral discharge (22%) was the common complaint among rural subjects followed by vesicles (17%), ulceration of genitalia and oligospermia (11%). Whereas oligospermia was the most common abnormality among urban subjects (22%).

Similarly in females we found distribution of pelvic inflammatory disease, fibroid and abnormal vaginal discharge was around 17% for the rural women. The urban women had complaints of PID around 17% and 14% with fibroid.

Among women with menstrual irregularity 73% of them had oligomenorrhea, of which 40% were rural residents and the remaining 33% were residing in urban areas. Polymenorrhea was found to be present in 20% of the rural women and in 7% of urban women

Knowledge about fertility period was very less among

Variables	Rural			Urban		
	Males	Females	Total	Males	Females	Total
Diabetes	N (20%)	N (5%)	14(25%)	7(13%)	4(7%)	11(20%)
Hypertension	5(9%)	2(4%)	7(13%)	4(7%)	5(9%)	9(16%)
Hypothyroidism	7(13%)	3(5%)	10(18%)	3(5%)	1(2%)	4(7%)
Tuberculosis	4(7%)	2(4%)	6(11%)	0	0	0
Asthma	1(2%)	1(2%)	2(4%)	1(2%)	0	1(2%)
Total	28(51%)	11(20%)	39(71%)	15(27%)	10(18%)	25(45%)

\*Multiple responses

participants but comparatively it was higher among urban people (11%) when compared to rural participants (4%). No association was found with area of residence.

### Discussion :

In our study 12% and 33% of the participants had family history of infertility and history of consanguineous marriage respectively. When compared between rural and urban participant's family history of infertility (54%) and consanguinity (67%) was more among rural participants. Similar results were reported by Samiha S *et al*<sup>3</sup>.

This difference might be due to the fact that, in this region socio - cultural practices are still predominant among rural residents when compared to urban dwellers.

The addictive habits were present among 55% and 59% of the rural and urban males respectively. Among which, majority of the men in the rural area had the habit of tobacco consumption (62%). Similarly in urban area, alcohol consumption was higher (59%) when compared to tobacco consumption.

As reported in a study by Shilpa *et al*, 60% of the infertile males had the habit of both alcohol consumption and tobacco smoking, 8% of them had the habit of tobacco consumption or smoking<sup>4</sup>.

The study conducted by Mohammad M *et al*, revealed that the possibility of infertility in male smokers was 1.5 times as much as non-smokers (OR= 1.5). Smoking is a dangerous habit which can effect sperm quality and quantity and result in male infertility. Cigarette smoking is associated with reduced semen quality in terms of sperm density, total sperm count, total number of motile sperm and citrate concentration<sup>5</sup>.

Study conducted by Close CE *et al*, showed the relationship of current use of cigarettes and alcohol was related to the parameters of seminal fluid analysis, sperm penetration assay and sperm autoimmunity. Current cigarette smokers and heavy alcohol users showed greater numbers of leukocytes in the seminal fluid than did nonusers and is statistically significant. In addition, cigarette smokers had lower sperm penetration assay scores than non-smokers. Cigarette smoking continued to show a significant decrease in sperm penetration assay score ( $p = 0.03$ )<sup>6</sup>.

The present study highlights that grade I obesity was observed among 19% of the male participants and 9% of the female participants. Similarly 48% of the male subjects and 24% of the women were at risk of obesity. Rajashekar L *et al*, reported that obesity was seen among 49% of the infertile participants<sup>7</sup>.

Results of the present study also observed that both under-weight and over-weight was high among the infertile study subjects. Studies have shown that male obesity was associated with increased incidence of low sperm con-

centration and low progressively motile sperm count. Thus BMI is an important contributory factor to male infertility<sup>8</sup>.

Sharma R *et al*, said in their study that for women, being underweight and having extremely low amounts of body fat are associated with ovarian dysfunction and infertility<sup>9</sup>. Hence both over weight and under-weight might be the contributing factor for infertility in our study population.

Around 57% of the participants reported one or the other co-morbid conditions. Among those participants with medical conditions, proportion of diabetes was found to be more in both rural (20%) and urban (13%) study subjects. This is similar to the results by Shilpa *et al*. where 18% of the infertile participants had diabetes<sup>4</sup>.

In 17% of the rural women were suffering from pelvic inflammatory diseases, fibroid, PCOD and abnormal vaginal discharge. In urban women PCOD was among 7% and abnormal vaginal discharge among 3%. Similar findings were observed by Shilpa *et al*<sup>4</sup>.

Menstrual irregularity was present among 17% of the rural women and 16% of the urban women. Among whom 73% of them had oligomenorrhea, (40% from rural and 33% from urban). Similarly in a study conducted by Samiha S *et al*, menstrual cycle irregularity was reported among 27% of the women with primary infertility and 37% of the women with secondary infertility<sup>3</sup>.

Menstrual irregularities was found in 37% of infertile females attending infertility clinic according to study done by JA Obunaon Clinical Presentation of Infertility in an Outpatient Clinic of a Resource Poor Setting, SouthEast Nigeria<sup>10</sup>.

In a study conducted at an Endocrinological clinic about 8 to 10 new couples with infertility register every day and various causes detected were 15% of the participants had endocrinological abnormalities, 22% with semen abnormalities, 17% with ovarian failure, 9% hyperprolactinemia, 7% with tubal diseases<sup>9</sup>.

In our study past contraceptive history were nil among both rural and urban participants. Oral contraceptives were demonstrated to have positive effects on the prevention and management of endometriosis and pelvic inflammatory disease<sup>9</sup>. The high proportion of respondents with co-morbid conditions may be probably due to un-healthy lifestyle, illiteracy and ignorance.

Conclusion: Infertility affects the couples, not the individual hence the burden is on the family. It has profound effect on people's lives. Medical disorder were more among men and Reproductive system disease were among women. There is no proper knowledge about infertility and fertile period. Most of them think it as a result of past sins and practice unscientific methods to overcome the prob-

lem. Hence majority have not consulted any doctors.

Even the educational status is very poor indicating the first barrier towards motivating the couples to access health care services. It is worth mentioning that during our study period we educated and counseled the couples and their family members regarding the common causes of infertility, fertile period, to decrease the stress and stigma, lifestyle modification and to seek treatment.

### *Recommendations :*

■ Efforts to raise awareness in the population about the causes of infertility are needed and facilities should be made available for early diagnosis and treatment of the same in the rural areas/urban slums. Further research needs to be undertaken involving appropriate investigations which are feasible at the primary health centre level.

■ Promoting healthy behaviours like changes in lifestyle including weight reduction, avoidance of consumption of alcohol and tobacco, which will have a positive influence on fertility and emotional support should be initiated.

■ Majority of infertile couples were suffering from one or more co-morbid conditions, in this context proper and timely intervention needs to be undertaken to tackle the problem.

### REFERENCES

- 1 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.

- 2 A training manual for height, weight and BMI assessment — Developed by BMI task force [Internet] 2010 [cited 2015 September 20]. Available from www.achi.net> BMContent> Documents
- 3 Shamila S, Sasikala SL — Primary report on risk factors affecting female infertility in South Indian districts of Tamil Nadu and Kerala. *Indian J Community Med* 2011; **36**: 59-61.
- 4 Shilpa — Prevalence and bio-social correlates of infertility in rural field practice area of Kempegowda institute of medical sciences, Bangalore. Dissertation submitted to the Rajiv Gandhi University of Health sciences in partial fulfillment of the requirement for the degree of MD in Community Medicine. 2013.
- 5 Mohammad M, Fariba G — The effect of smoking on the sperm and male infertility. *Journal of Kermanshah University of medical sciences* 2013; **17**: 294-9.
- 6 Close CE, Robert PL, Berger PE — Cigarettes, alcohol and marijuana are related to pyospermia in infertile men. *The Journal of Urology* 1990; **144**: 900-3
- 7 Rajashekar M, Lavanya R, Krishna D, Patil M — Polycystic ovaries and infertility: Our experience. *Journal of Human Reproductive Sciences* 2008: 65.
- 8 Ahmad OH, Nicole W, Mark G, Anna P, Douglas T, Carrell, *et al* — Male obesity and alteration in sperm parameters. *Fertil Steril* 2008; **90**: 2222-5.
- 9 Sharma R, Biedenharn KR, Fedor JM, Agarwal A — Lifestyle factors and reproductive health: taking control of your fertility. *Reproductive Biology and Endocrinology* 2013; **11**: 66.
- 10 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. *International Journal of Tropical Disease & Health* 2012; **2**: 123-31.