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Original Article

A Study on Socio-demographic status of infertile men attending IVF centre of Geetanjali Medical College & Hospital, Udaipur, Rajasthan, India

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***ABSTRACT*:**
Introduction: Male infertility can be defined as an inability to induce conception due to defect in spermatic function. It is a worldwide problem and approximately 8-10% of couples within reproductive age group are infertile. It is estimated that globally 60-80 million couples suffer from infertility every year, of which probably between 15-20 million are in India alone. Considering its high prevalence and widespread impact, it has been included as a part of the national program for Reproductive and Child health in India. **Objective:** To study the socio-demographic profile of infertile men attending IVF centre. **Methods:** A Single centric, prospective and cross sectional study was conducted at IVF centre of Geetanjali Medical College & Hospital, Udaipur. A total of 191 male subjects, of age group 21-45 years were included in the study. A pre tested, semi structured questionnaire were used for data collection and written consent was obtained from such patients. Data were analyzed in SPSS software. **Results:** Out of 191 respondent's majority were of age group between 31-35 years (29.84%), from urban area (76.43%), non-vegetarian (66.49%), alcohol &tobacco users (smoker/chewers) (43.45 %), literate (87.43%), industrial or factory workers (23.03%), and belonged to lower middle class socio-economic status (53.40%). **Conclusion:** An overall improvement in living condition, type of diet, social habits, education, socio-economic status and counselling is necessary to decrease the prevalence of infertility in men.
Key words: Socio-demographic, socio-economic status, infertility, IVF centre

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INTRODUCTION:
Infertility is a global problem affecting nearly 15% of couples with in reproductive age group [1,2]. A survey was conducted by WHO reported that the male infertility contributes about 51.2% among all other etiologies [3].Though infertility is affecting 60-80 million couples every year around the globe, it has also affected a huge numbers of approximately 15-20 million couples in India with the prevalence rate around 23% [4, 5].Further the literature also reports the deteriorating quality of human semen, evaluated for infertility in southern India. Probably attributed to environmental, nutritional, life style and socio-economic causes[6].
The magnitude of problem is on a rise in Indian scenario and there is paucity of literature on the same, the present study is designed to find out the prevalence of infertility , socio-demographic profile and identify any underlying cause & modifiable factors that can affecting the fertility status of men.Considering the importance of infertility as a public health problem affecting the individual and the family's mental and social wellbeing it has been included as the part of the national program for Reproductive and child health in India [7].

METHODS:
The present study was designed a cross sectional, observational study, conducted at infertility center of a tertiary care hospital of southern Rajasthan. The study was carried out for two years after obtaining the approval from institutional ethics committee.
The study was conducted on 191 male subjects enrolled in the infertility clinic for treatment. These subjects between age group 21-45 years were recruited by consecutive sampling after obtaining the written informed consent. The subjects with any systemic disease affecting

reproductive system and unwilling to participate in the study were excluded. All patients were asked to provide semen sample after 3-5 days of ejaculatory abstinence. Semen specimens were produced by masturbation directly into a sterile plastic container, in a room specially provided for this purpose and located adjacent to the laboratory. After liquefaction, semen processing and analysis was performed according to the World Health Organization (WHO) recommendations. Seminal volume was determined in a graduated tube. The sperm count was assessed by conventional method using Makler counting chamber (Sefi Medical Instruments, Israel) and expressed in millions/mL and sperm motility was assessed in at least 100 sperms and expressed as percentage of motile sperm (sum of rapid progression plus slow progression sperm). Sperm morphology was assessed by Leishmen's stain [8]. Various factors that studied were the demographic characteristics, age, residence, literacy, diet (vegetarian& non vegetarian), occupational exposure to heavy metals, heat, chemicals etc, and socio-economic status which were recorded in a semi structured, pre-tested and validated questionnaire by interviewed. Data was tabulated in Microsoft excel sheet and analyzed by Graph pad prism 7.0 software.

RESULTS:

This cross-sectional study involved 191 respondents. The majority of them, 57 (29.84%) were within the 31-35 years age group. A minor proportion, 27 (14.13%) were within the 21-25 years. The rest of the respondents 40 (20.94%), 34 (17.80%), 33 (17.27%) were within the 36-40, 26-30 and 41-45 years age group respectively, shown in Table-1 & figure-1.

According to their residential province, a significant number of the sample population (146, 76.43%) were belonged to urban area and less number (45, 23.56%) were belonged to rural area. This could be due to more awareness in urban area and less awareness in rural area. Education positively influences the cognizance on male infertility which was also significant in our study that is 87% and remain were illiterate 13%. In the present study, we also found that higher education was associated with utilization of infertility services.

On the basis of occupation majority (23.03%) of patients was industrial worker or factory worker followed by private service (21.46%), self employer (20.41%), daily wages (15.7%), government service (14.13%) and unemployed (5.23%), is shown in figure-2. Here, vegetarian have more (66.49%) chances of infertility as compared to non-vegetarian (33.5%).38.21% men who had semen abnormality were addicted to smoking and chewing of tobacco. And 24.6% men with semen abnormalities were addicted to alcohol. 43.45% men were addicted to both tobacco and alcohol amongst those with abnormal seminograms. All study subject's socio-demographic status such as educational qualification, residence, occupation, diet and social habits were summarized in Table 1.

Out of 191 respondents, more than half (53.40%) of the patients belonged to upper middle class followed by lower middle class (21.46%). Very few patients belonged to upper class (15.70%) and lower class (9.42%). Majority of the infertile patients belonged to middle socioeconomic status, is shown in figure-3.

Table: 1 – Assessment of socio-demographic characteristics among the study subjects

Characteristics	Age (Years)	Number	Percentage (%)
Age	21-25	27	14.13 %
	26-30	34	17.80 %
	31-35	57	29.84 %
	36-40	40	20.94 %
	41-45	33	17.27 %
	Rural	45	23.56 %
Residence	Urban	146	76.43 %
Educational qualification	Literate	167	87.43 %
	Illiterate	24	12.56 %
Occupation	Govt. service	27	14.13 %
	Private service	41	21.46 %
	Self employ	39	20.41 %
	Daily wages	30	15.70 %
	Industrial/ Factory workers	44	23.03 %
	Unemployed	10	5.23 %
Type of Diet	Vegetarian	64	33.5 %
	Non – vegetarian (mixed)	127	66.49 %
Social habits (Addictions)	Alcohol	47	24.60 %
	Tobacco (smoking/ chewing)	73	38.21 %
	Both	83	43.45 %
	None	71	37.17 %

Figure: 1 – Distribution of infertile men according to Age group

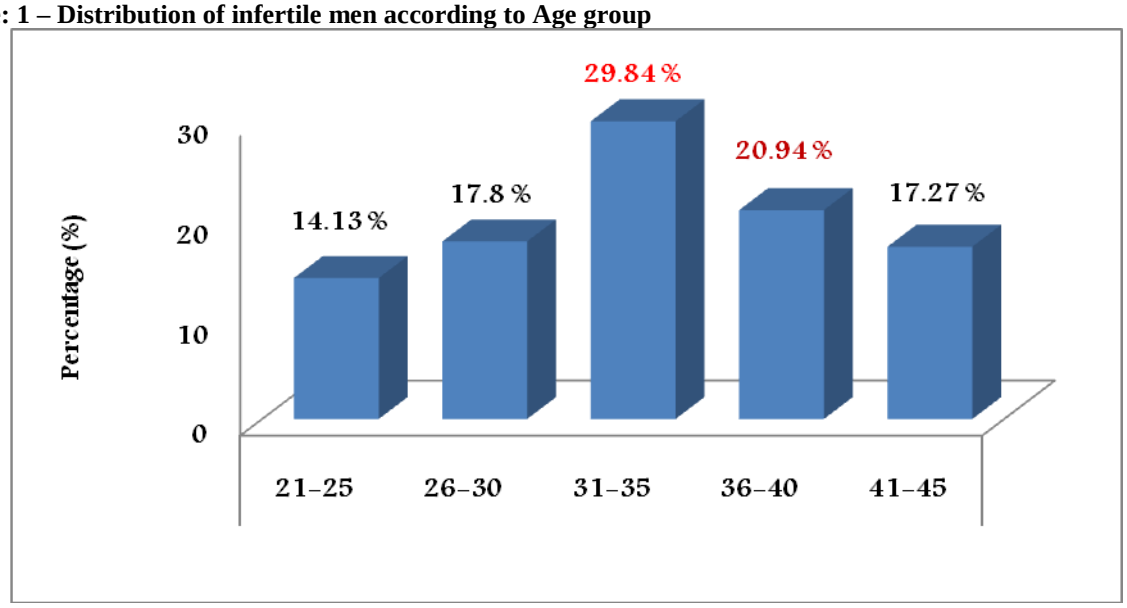


Figure: 2 – Distribution of infertile men according to Occupation

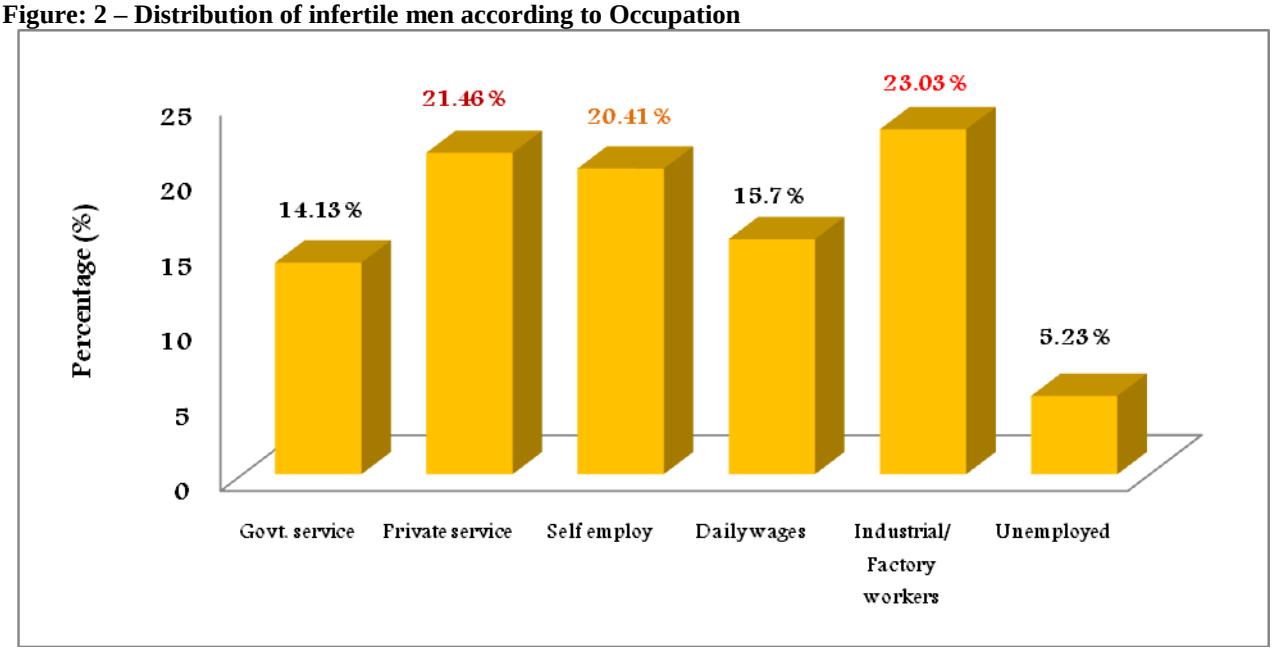
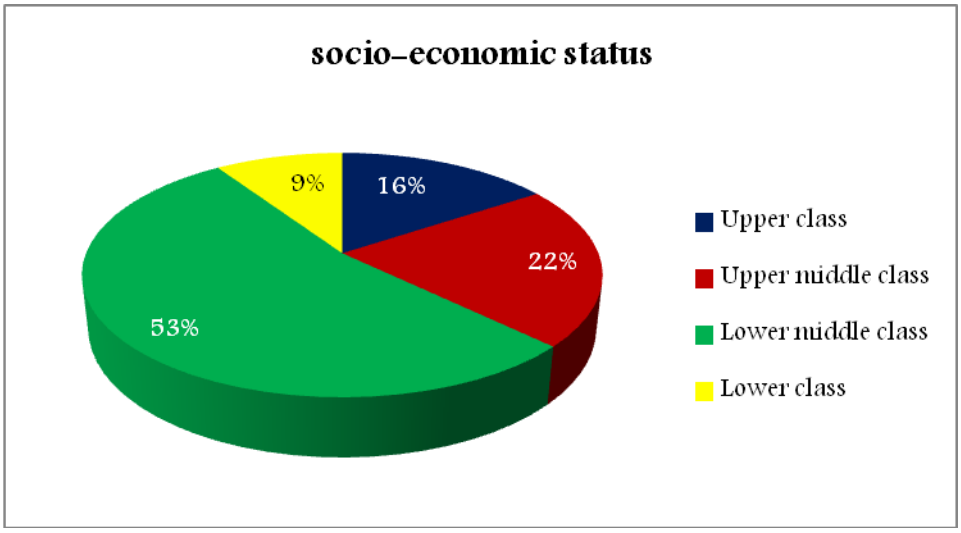


Figure: 3 – Pie diagram showing distribution of infertile men according to socio-economic status



DISCUSSION:

In this Study Majority (50.8%) of patients were found between 31 to 40 year of age group which similar to a survey conducted across 9 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 infertile [9].It may be due to most of them postpone their marriage for higher education and similar results were found by Nirmalya Manna et al [10]that high school education and above have markedly higher infertility (87.43%) rate than the less educated. But in this study it also found that 12.56% were illiterate and basic education is necessary for awareness.

In current years, the rise of environmental pollution in industrial based countries have also increased infertility [11] and our studyalso shown that most of the infertile patients were belonged to urban area those working in industrial area and private-employed like bus drivers and agricultural workers so they regularly exposed to harmful chemical, and pesticides which adversely affected all spermogram parameters. Similar results were found in Epidemiology and aetiology of male infertility study conducted by Irvine DS [12].

Shao Lin et al., has done study on fertility rates among Lead workers and Bus drivers and found that Lead exposure has an adverse effect on male fertility, especially among workers with a long duration of elevated blood lead level [13].

Long time exposure to heat of scrotum has adversely affects the spermatogenesis and sperm count because physiologically scrotal temperature must be lower than normal body temperature about 3-4^{o}C. So those who were continuously sitting for long time for their work like drivers and engineers (software engineers keep their laptop for long time which producing heat) it will lead to increase scrotal temperature & increase chances of infertility.Current studies on the effects of Lifestyle factors such as clothing, posture, sedentary behaviour, and the wearing of nappies by babies all seem to predicate a worsening of male reproductive parameters, possibly contributing amongst other factors to the secular trends observed in sperm counts across the globe [14]. In which additionally similar effect was in military population that heat exposure as an independent risk factor for male infertility [15].

Certain research works have also reported that psychological stress [33], Obesity [34] affects male infertility by influencing the hypothalamic-pituitary-gonadal axis, thus causing detrimental effects upon spermatogenesis and subsequent fertility.On other hand several studies have been done on exposure to environmental toxicants that disrupt sperm production or the function of reproductive hormones or sperm may increase the risk of male infertility [16].

Recent studies illustrate that nutrition and lifestyle factors play a critical role in the normal function of the reproductive system [21, 22]. Apart from demographic and certain known lifestyle factors (such as age, smoking, and alcohol intake), are also decreased sperm quality.

Study findings were revealed that vegetarian have more (66.49%) chances of infertility as compared to non-vegetarian (33.5%). In earlier researchers were proposed a couple of different explanations for the differences. They suggested that the vegetarians may have been deficient in vitamin B_{12}. This would be a logical explanation if the men weren't supplementing, since vitamin B_{12} levels are correlated with sperm concentrations [17].

They also proposed that the higher soy content of vegetarian diets might have an effect on sperm concentration. Soy foods contain isoflavones, which are plant estrogens. But, while that may sound like a bad thing for male fertility, clinical research shows pretty clearly that consuming soy isoflavones has no effect on sperm concentrations in healthy men [18-20].

24.6 % men who had semen abnormality were addicted to alcohol. And 38.21% men with semen abnormalities were addicted to tobacco (such as smoking & chewing). 43.45% men were addicted to both tobacco and alcohol amongst those with abnormal seminograms. This supports the fact that excessive alcohol consumption has been supported with poor reproduction [23].

Tobacco use is prevalent, particularly outside Western countries [24]. Most of the studies have reported a

negative association between smoking tobacco and spermatogenesis. Similar results were found in our participants also. Smokeless tobacco has also been associated with decreased sperm counts and concentrations in a dose-dependent fashion [25, 26].

There are several possible mechanisms by which smoking tobacco may lead to decreased spermatogenesis. More than 4700 different chemicals have been identified in tobacco smoke [27], several of which have known effects on spermatogenesis. Tobacco smoke may alter blood and seminal fluid heavy metal concentrations. Lifetime smoking estimate was significantly and positively associated with seminal plasma lead levels [28], and smoking is currently the most common source of cadmium exposure in the general population [29].This is an issue that both developed and developing countries face. This type of life style eventually leads to fertility problems.

CONCLUSION:

Infertility is a medical as well social problem, the couple and the family suffers at the same time-silently. An overall improvement in living condition, type of diet, social habits, education, socioeconomic status and proper counselling is necessary to decrease the prevalence of infertility in men. But identifying the cause may give relief to the women from various social stigmas where women are accused or made entirely responsible for her bare womb. And also these factors help in characterize the utilization of male reproductive health services in India and may help address disparities in access to these services and improve public health strategies.

The major limitation of this study was it commenced at tertiary teaching care hospital so it didn't represent occurrence of infertility in particular regional area.

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