

Assessment of socio-demographic characteristics in Infertile men who Referred to Shariati Hospital in Iran

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Abstract: At least 50% of infertility is partly or completely attributable to a male factor. Some factors affecting infertility is related to genetic and environmental factors. This study examined demographic characteristics of men with infertility who were referred to the Shariati Hospital Infertility Clinic. This is a cross-sectional study. 200 eligible patients were enrolled with written consent. Face-to-face interviews were based on a questionnaire that included variables on socio-demographic characteristics and Sperm analysis test performed by all individuals. Their height and weight measurements were recorded. The mean age was 34.1 ± 5.7 the average year after marriage number was 3.6 ± 1.3 years. The majority of people were self-employed, and a high proportion of them were exposed to chemicals in their work environment. However, this study found that the risk of diabetes disease, mumps, varicocele is higher among workers. The sperm analysis showed that the most common Problem of infertile men was decrease in sperm motility. So that more than 162 participants of the study were 40% lower sperm motility. In this study the relationship between sperm parameters in infertile men and factors such as obesity, smoking, BMI, occupational status and previous disease and was not significant.

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Key words: semen analysis parameters, infertility, socio-demographic characteristics

Background and Goal:

Infertility refers to inability have a child at least two years after marriage without using prevention devices (1). According to the World Health Organization, infertility affected about 80 million couples across the world (2) which 50% of reasons relates to male factors (3). In a research in USA, infertility prevalence was predicted as 10-15% and about 19% in Australia (2). Infertility prevalence in 2009 among couples between 21-26 years old in Iran was predicted as 17.2% (4). Experience of infertility which some called it "Infertility Crisis" follows physical, economic, psychological and social stress (5). Due to Many differences which exists at different environmental conditions that is related to infertility

behavior such as marriage age, multiple sex partner, environmental pollutions, Alcohol Consumption, smoking cigarette and infectious disease prevalence, so etiology of infertility incidence and frequency of different reasons of infertility In different regions are different (6). Some studies represented harmful impacts of environmental factors including toxic substances, pesticides and radiations on men' infertility (7, 8). Drinking alcohol and smoking cigarette also can be related to men infertility (9, 10, 11, and 12). Impact of heavy physical work and sitting jobs also are discussed (13). Varicocele also is one of main effective environmental factor in men infertility but its treatment impact on infertility improvement is unclear (14, 15). There is paradox in this subject about celiac disease (16,

17). Increase body mass index is considered effective in some studies and affectless in others (19, 20, and 21).

Since that main and most logical approach for decreasing infertility problem is to decrease its incidence and improve fertility health in order to prevent infertility incidence, then awareness of frequency of different factors of infertility at each region enjoys health importance and can be effective on managers' decisions. This research was performed with the aim of assessing some factors including age, occupation and literacy level, medical treatment, smoking cigarette and disease history in infertile men whom refers to Shariati infertility Clinic.

Materials and Methods:

This is a cross-sectional study that was part of a larger study which was performed in March 2010 through May 2011 with aim of genetic assessment of infertility. All qualified infertile men whom referred to Shariati infertility clinic were included in the study. 200 patients were qualified to enter in this study after they presented written consent. In this study, men infertility refers to those cases that married more than one year ago and no fertility happened in their wives and the relative results showed infertility and Sperm disorder. The data were collected by questionnaire which included questions related to demographic features (age, occupation, height, weight, marriage duration, marriage age, fertility history, medication, history of heart disease, high blood pressure, diabetes, smoking cigarette history, and surgeries such as hernia surgery, prostate and varicocele and Sperm Test that the researcher directly referred to those clinics and interviewed men. Sperm Test was performed for all patients by one laboratory. Their heights and weights were measured by stadiometer and registered in questionnaire. According to the main purpose of the study, all of these items were designed as yes or no. including the number of cigarettes consumed and the amount and duration of exposure to chemicals QUESTION did not work.

Exclusion criteria were as following: 1- those whom were not ready to cooperate in this plan verbally or in written form. 2- Those whom their semen was just enough for their clinical tests. The variables were consistent with questionnaires then their incidence amount and average were assessed in infertile men. Protocol of this study was approved in ethic committee of Tehran University of medical science.

Data analysis was performed by SPSS software and subjects were assessed by using descriptive-statistical tests in terms of such features such as age, Body Mass Index, occupation, smoking cigarette, drugs and surgery.

Relation between many variables such as cigarette, disease, drugs, the surgery on sperm parameters also were determined by linear regression. Confidence coefficient equals to 95% ($\alpha=0.05$)

Findings:

The age mean was predicted as 34.1 ± 5.7 in terms of demographic features among 200 assessed infertile men in this study. Average of years after marriage equals 3.6 ± 1.3 . Body Mass Index was calculated as 24.1 ± 5.7 which represented normal weight among these peoples.

Most patients of this study were self-employed that most of them based on self report were dealing with chemicals Including lead, mercury, toxic gases, chemical colors. Their literacy level was less than Diploma (121(60.5%). Three-quarters rejected in terms of any history of smoking cigarette, disease, surgery, medication and sexual disorders. It was observed however that risk of some diseases such as diabetes, Orion, varicocele was higher among workers than clerks. Semen analysis test showed that most infertile men problem relates to decreased Sperm movement so that more than 162 patients had sperm movement less than 40% (81%). 136 (68%) respondents had no minimum normal sperms. The number of sperms was so that 84 patients (42%) suffered reduced sperm and of this, 39 (46%) had no sperm.

Peoples of sample society were divided to two groups by considering minimum border of 20 million sperms per 1 mL semen and there was no significant difference between two groups in terms of factors including age, years after marriage, Body Mass Index, literacy level, smoking cigarette, disease history, sperm movement and morphology indexes (table 1).

By considering smokers and nonsmokers, peoples were divided to two groups and there was no significant difference in terms of analysis indexes of sperm (table 2).

By dividing peoples to two groups of patients and non-patients, there was no significant difference between these two groups in term of sperm analysis index (table 3).

A relationship of many factors including cigarette, BMI, occupation, disease history, and medication history with sperm count was measured using linear regression and no significant difference was observed (table 4).

Discussion:

Sample of infertility etiology is different across the world based on different human, health, geographical and cultural conditions. It is important to determine effective factors on infertility among developing countries. Aim of this study also was to perform this and relationship of some factors such as overweight, smoking cigarette and past disease with sperm indexes didn't exist in it.

In this study in term of sperm count (by considering minimum sperm border of 20 million sperms per liter for fertility, WHO 2010) peoples were divided to two groups and indexes had no significant difference among two groups. No significant impact was reported in term of BMI effect on the sperm quality. In contrast, Guner et al (11) and Poush et al (21) found in their researches that increased BMI negatively effects sperm quality. Douplexis et al (22) in addition to confirm effect of overweight on sperm quality addressed that weight loss had no effect on sperm quality improvement. Pauli et al (23) however also reported low effect. One of the reasons of conflict findings in this study can be definition of natural amount of analysis indexes including numbers, movement and its morphology and at the other hand definition of "infertility" term. At the other hand, effect of overweight on total sperm indexes was assessed in this research. Potential impact of overweight on infertility maybe exists in more specific biological and hormonal area that is hidden in this paper. No negative effect was reported in term of impact of smoking cigarette on sperm quality. Guner et al (11), Ghahremani & Ghaem (7) and Karimpoor et al (6) however, represented different finding. Harmful substances which exist in cigarette smoke impact on hypothalamic generation cycle and prevent enough and high-quality sperm generation (23). Dominated conditions on this study maybe the reason of conflict findings since that according to evidences, sample of infertility etiology can be different based on different human, health, cultural and geographical conditions across the world (6). At the other hand according to low number of smokers in this study (ratio of 50 smokers against 150 nonsmokers) it seems that this conclusion be at the level of this study. In term of impact of physical illness on sperm quality also no negative impact was reported in this study. In many studies (7, 26) this impact was observed. But Karimpoor et al (6) confirmed this finding. Although varicocele was identified as main known infertility factor in men in the past, but according to recent evidences and studies, we cannot certainly confirm relationship between varicocele and infertility, but at least we can point to relationship between varicocele and men infertility. The main evidence to confirm this relationship is more varicocele prevalence among infertile men in contrast with public population. Mechanism of varicocele on men fertility is not specified certainly however this mechanism can be multi-factors

and total factors can be effective. By the way, in spite of mechanism of varicocele and based on findings in this study it can be said that this effect was started with Lesion formation at low ages and reaches stable state in fertility ages but after that, fertility condition will not be more serious under that lesion, progressively.

In this study among those who were self-employed, number of peoples who deal with chemicals was more than others that represented effect of these factors on men infertility. Such result also observed in case study by Mendiula et al (28) and review study by Boundi (27). Testicular sensitivity to chemicals effects men fertility process (27). But Inhorn et al didn't confirm such relationship (29). The reason is that environmental facing with chemical purified has not been at deleterious level and higher doses should be observed for men regeneration system to be at risk. At recent decade, there is high tendency of studies toward assessing environmental factors on men infertility. It seems that occupational and environmental factors and also geographical features can be effective on some parameters of infertility. However, knowing how to effect, can be helpful to prevent these factors. Short sample size could be considered as a limitation of the present study because genetic studies, sperm samples and limited laboratory facilities for researchers to consider a larger sample size were not possible.

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Table 1- Socio-demographic characteristics of the two groups of infertile men compared with zero and one (based on sperm count)

Socio-demographic characteristics	Group 1 (based on sperm count < 20) (n=80)	Group 1 (based on sperm count < 20) (n=116)	†P.Value
Age	34.1±6.4	34.1±5.1	0.9
Marriage age	3.5±1.4	3.7±1.3	0.3
Weight	77.2±12.9	73.7±12.4	0.06
Height	1.75±6.8	1.75±7.4	0.6
BMI	24.1±5.09	23.7±4.06	0.6
Sperm analysis component			
Sperm morphology	22.9±18.2	22.6±19.1	0.9
Sperm motility	21.8±13.3	19.3±12.3	
Occupation (self-employed)	78(%65.52)	58(%67.28)	0.4
Smoking(yes)	19(%22.61)	31(%26.72)	0.3
History of disease Varicocele			
Orion	6(%7.14)	16(%13.79)	
Hernia	4(%4.76)	6(%5.17)	
Diabetes	0(%0)	3(%2.58)	
No	3(%3.57)	6(%5.17)	0.2
	71(%84.52)	85(%73.27)	
History of medication	13(%15.74)	24(%20.68)	0.2
History of Surgery	14(%16.66)	29(%25)	0.1
History of sexual disorders	23(%27.38)	41(%35.34)	0.1

*Values based on the mean ± SD and number (percent)

† T test for quantitative variables and the chi-square and Fisher's exact test was used for qualitative variables and the statistical level of less than 05/0P.Value <was considered significant.

Table 2- Comparison of semen analysis parameters in both zero and one(based on smoking or non-smoking)

Semen analysis parameters *	Group 1 (non smoker) (n=150)	Group 2 (smoker) (n=50)	†P.Value
Sperm count (million per MI)	23.4±19.4	23.3±19.1	0.9
Sperm morphology (percent)	26.1±19.4	21.6±18.5	0.7
Sperm motility (percent)	20.3±12.02	20.9±13.3	0.1

* The values are based on the mean and standard deviation.

Table 3- Comparison of semen analysis parameters in both zero and one (based on patient or Healthy)

semen analysis parameters *	Group 1 (Healthy) (n=156)	Group 2 (patient) (n=44)	†P.Value
Sperm count (million per MI)	22.4±19.5	26.6±17.5	0.1
Sperm morphology (percent)	21.7±17.8	26.2±21.5	0.5
Sperm motility (percent)	21.1±13.01	19.6±12.9	0.1

*Values based on the mean ± SD and number (percent)

†Based on t test and the statistical level of less than 05/0P.Value <was considered significant.

Table 4- Socio-demographic factors associated with sperm

Confounding factors	B‡	Confidence interval (95%)	P.Value†
Occupation (self-employed)(yes)	3/83	(-0/4 ∙ 8/09)	0/07
BMI (>25)	0/8	(-3/4 ∙ 5/2)	0/6
Smoking (yes)	-2/2	(-6/8 ∙ 2/2)	0/3
Disease (yes)	-0/41	(-5/1 ∙ 4/2)	0/8
Drug (yes)	-7/1	(-6/61 ∙ 2/2)	4/0

‡ Regression coefficient that represents the effect of the factor in model.