

# Sexual Dysfunction and Infertility

## Prevalence of infertility in Tabriz in 2004

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### ABSTRACT

**Introduction:** Our aim was to determine the prevalence of primary and secondary infertility in Tabriz population and to compare the marriage age between infertile and fertile groups. We also evaluated the rate of seeking help for treatment of infertility among the patients.

**Materials and Methods:** In a survey, we evaluated the prevalence of infertility in Tabriz in 2004 using cluster random sampling. Tabriz was divided into 360 zones and from each zone, 10 couples were selected. Six interviewers filled out the questionnaires by direct reference to interviewees' homes. Overall, 3600 couples were evaluated for infertility.

**Results:** Of 3600 couples, 3183 were married for more than a year and answered the questions appropriately. Prevalence of infertility was 3.27% (2.04% as primary and 1.23% as secondary infertility). Among couples whose wives were in their reproductive age (15 to 49 years), the overall prevalence of infertility was 3.35% (2.05% as primary and 1.30% as secondary). Mean age of women at marriage was significantly higher in couples with primary infertility ( $20.87 \pm 5.4$  versus  $18.75 \pm 4.04$ ;  $P < .001$ ). Treatment seeking was 79.6% and 67.6% among patients with primary and secondary infertility, respectively. In general, 75% of the patients had referred to medical centers.

**Conclusion:** The prevalence of primary infertility was almost the same as other Asian countries, but the prevalence of secondary infertility was lower than other countries. A higher marriage age was accompanied with a significant decrease in fertility of the couple. Primary infertile patients had referred to medical center slightly more often than secondary infertile patients.

**KEY WORDS:** primary infertility, secondary infertility, population, prevalence

### Introduction

Studies on infertility prevalence are rare in Iran, and to our knowledge, there has been one study in this area in which the infertility prevalence is reported among couples referring to medical centers of the west part of Tehran.<sup>(1)</sup> However, this study is not a representative

sample of the society. The aim of this study was to determine the prevalence of primary and secondary infertility in Tabriz population (one of the major cities of Iran, in the northwest) and to compare the marriage age between fertile and infertile couples. We also evaluated the rate of seeking medical help among infertile couples.

### Materials and Methods

In a survey, we selected 3600 couples using a cluster random sampling in 2004 to determine infertility rate among couples in Tabriz, Iran. The

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study was approved by the institutional review board of Tabriz University of Medical Sciences. The city was divided into 360 areas (according to the geographic map), and 10 couples were randomly selected from each area. Six interviewers were trained to refer to the couples' homes and fill out the questionnaires. Considering cultural issues, the interviewers were chosen from among women to achieve the best outcomes. The questions included the couples' ages, marriage duration, willing to have a child, pregnancy history, and history of seeking for medical help to evaluate infertility (Appendix). The questionnaire and the interviewers were evaluated by the psychology and research divisions of our university. In some areas, the data were controlled by the researchers to confirm their accuracy. Since most of previous studies had evaluated 15- to 49-year-old women,<sup>(2)</sup> we evaluated the infertility in couples whose wives were in this age range.

Primary infertility was defined as no conception during marriage after at least 12 months' period of intercourse without using contraception. Secondary infertility was defined as no conception after at least 12 months' period of intercourse without using contraception in a couple who had at least 1 conception before.

The data were analyzed using SPSS software (Statistical Package for the Social Sciences, version 11.5, SPSS Inc, Chicago, Ill, USA). Student t test was used to compare continuous variables and chi-square test was used to determine the relationship between age groups and infertility. A *P* value less than .05 was considered significant.

## Results

Of studied couples, 417 were excluded from analyses; 41 were married for less than one year and 376 couples had not answered the questions appropriately. Of 3183 couples, 104 (3.27%) were infertile, of whom 65 (2.04%) had primary and 39 (1.23%) had secondary infertility. Eighty percent of the couples had desired to have a child.

There were 2623 couples whose wives were at their reproductive age (15 to 49 years old); 88 couples (3.35%) were infertile, of whom 54 couples (2.05%) had primary and 34 (1.30%) had secondary infertility. Women of the infertile couples had a higher mean age at marriage compared to those of fertile couples (*P* < .001). Tables 1 and 2 show the mean ages of the patients in fertile, primary infertile, and secondary infertile groups.

To evaluate the age at marriage and its relation to infertility, the couples were divided into two groups of younger than 35 years and 35 years or older according to the ages of men and women. Eighty-five out of 2528 couples with wives younger than 35 at marriage were infertile, while infertility was present in 3 out of 7 with wives aged 35 years or older at marriage (3.4% versus 42.9%; *P* = .004). These rates were 82 out of 2431 for men younger than 35 years and 6 out of 104 for men aged 35 years or older (3.4% versus 5.8%; *P* = .161). The results for primary and secondary infertility are shown in Tables 3 and 4, respectively. Among the 88 infertile couples, 66 (75%) had referred to medical consultation centers for treatment of infertility; 43 couples (79.6%) from primary and 23 (67.6%) from secondary infertility groups had sought medical help.

**TABLE 1.** Age at marriage in fertile and primary infertile couples with wives in their reproductive ages (15 to 49 years)

	Fertile couples	Primary infertile couples	<i>P</i> value
Number of couples	2535	54	
Women's mean age at marriage (year)	18.75 ± 4.04	20.87 ± 5.44	< .001
Men's mean age at marriage (year)	24.99 ± 5.33	27.04 ± 8.04	.008

**TABLE 2.** Age at marriage in fertile and secondary infertile couples with wives in their reproductive ages (15 to 49 years)

	Fertile couples	Secondary infertile couples	<i>P</i> value
Number of couples	2535	34	
Women's mean age at marriage (year)	18.75 ± 4.04	20.03 ± 4.78	.08
Men's mean age at marriage (year)	24.99 ± 5.33	27.74 ± 4.25	.488

**TABLE 3.** Comparison of primary infertility rates in men and women regarding their ages

Fertility status of couple	Younger than 35 years	Thirty-five years or older	P value
<b>Women</b>			
Fertile	2528 (98%)	7 (78%)	-
Primary infertile	52 (2%)	2 (22%)	.014
<b>Men</b>			
Fertile	2431 (98%)	104 (95.4%)	-
Primary infertile	49 (2%)	5 (4.6%)	.074

**TABLE 4.** Comparison of secondary infertility rates in men and women regarding their ages

Fertility status of couple	Younger than 35 years	Thirty-five years or older	P value
<b>Women</b>			
Fertile	2528(98.7%)	7(87.5%)	-
Secondary infertile	33(1.3%)	1(12.5%)	.101
<b>Men</b>			
Fertile	2431(98.7%)	104(99.05%)	-
Secondary infertile	33(1.3%)	1(0.95%)	.592

## Discussion

World Health Organization (WHO) has estimated that there are 50 million to 80 million infertile couples worldwide.<sup>(3)</sup> Few studies have been performed to determine the prevalence and causes of infertility in many populations. Infertility may have different prevalence rates in different populations.<sup>(4)</sup> Among published reports, only one study has been performed in Iran; in 2000, Marzieh estimated the infertility rate to be 12% in the west part of Tehran.<sup>(1)</sup> However, since our study was a population-based study, the lower result is reasonable. There is no official statistics from neighboring countries, but according to the published data by WHO, the prevalence of primary infertility has been reported to be 1.8%, 2%, 2.8%, and 2.6% in Bangladesh, India, Sri Lanka, and Thailand, respectively; these rates are similar to our findings.<sup>(5)</sup> However, infertility prevalence is higher in some Asian and African countries such as Indonesia, Nepal, and Central African Republic (4.2%, 9.1%, and 6.9%, respectively).<sup>(6)</sup> In Nigeria, the prevalence of infertility (including primary and secondary), and primary infertility are reported to be 30.3% and 9.2% due to the high prevalence of genital infections.<sup>(7)</sup> It seems that in some of these countries, socioeconomic and regional factors play a role in addition to genital infections. In industrial countries, the prevalence of primary

infertility is a bit more than that in our study. In a recent study performed in United States, the prevalence of infertility reaches 8.5% among 15- to 44-year-old women.<sup>(8)</sup> In a study performed in Sweden, the influence of copper melting factories were evaluated, but no relation was found. In this study, primary and secondary infertility had a prevalence of 6% and 3 %, respectively.<sup>(9)</sup> In industrial counties, contact with chemical materials, air pollution, marriage at older ages, and high-risk sexual behavior may have an impact on the prevalence of infertility.

The prevalence of secondary infertility is less in our study comparing with other Asian countries. Secondary infertility prevalence in women is reported to be 26.5% to 18.9% and 12.9% in Central Africa and west Siberia.<sup>(2,6)</sup> The cause of this difference is probably related to socioeconomic factors and a lower prevalence of venereal diseases in our country. One of the Belgian universities has performed a study in Gabon in which the prevalence of primary infertility in semirural and rural areas has been 3% and 5.7%, and the prevalence of secondary infertility has been 22.4% and 20%, respectively. The probable causes are delivery of the first child at home and a positive history of abortion.<sup>(10)</sup> This can also be attributable to the rural areas of our country, but there is no information available in this regard.

Of 88 patients in our study, 79.6% with primary

and 67.6% with secondary infertility had referred to medical centers for treatment. In another study performed in Scotland, this rate was 62%.<sup>(11)</sup> In Havana, Cuba, this rate reaches 85.7% because of good nursing coverage and increased knowledge of the couples.<sup>(12)</sup> This shows the value of nursing training services in the treatment of infertility. Also, it depends on the desire of the couples to have a child. In some countries such as Denmark, this rate is 47.4%,<sup>(13)</sup> which shows their less desire for having a child. This factor may not have an essential role in our country because of a more desire of the couples to have a child.

Conducting of this study encountered some limitations; a face to face interview was required and we used women to perform the interview to reduce the difficulties of obtaining data. However, incorrect information was given by some interviewees especially about their ages. Repeated evaluations were required to decrease the rate of unreliable data, but finally about 10% of the couples were excluded.

We evaluated men's and women's ages at marriage which are, however, dependent variables to each other. As the female factor and male factor infertilities could not be determined by interview only, a precise assessment of each partner's age effects on infertility was not possible.

### Conclusion

According to our study, the prevalence of primary infertility in Tabriz is the same as other countries in the region, while the prevalence of secondary infertility is less, and so is the overall rate of infertility. In Tabriz, most couples wish to have children. This factor may have an impact on the rates of infertility. Thus, a comparison between the findings in different areas and countries must be done considering the desire of the couples to conceive. Further studies in other cities are recommended to estimate the prevalence of infertility in Iran.

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### Appendix

The Questionnaire of the study on the prevalence of infertility in Tabriz-2004:

Cluster No:.....

Family No:.....

Address:.....

Tel:.....

1) Husband's age:.....

Wife's age:.....

Duration of marriage:.....

2) Have you and your spouse ever decided to have a baby?

Yes ☐ For the first child ☐

Second child ☐

No ☐ We have enough children ☐

3) Did you/your wife conceive when you wished for it?

No ☐ Yes ☐

- The outcome of pregnancy:

Abortion ☐ Still birth ☐ Live birth ☐

Death after birth ☐

- How long after the marriage, pregnancy occurred without contraception?

.....Month(s)

- Do you use contraceptive methods?

Yes ☐

No ☐

4) Have you ever referred to a medical center or a doctor's office for treatment of infertility?

Yes ☐

No ☐

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