

Knowledge of Men and Women about infertility Risk Factors

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Abstract

Background and objectives: With the modern lifestyle of men and women and technological developments, many infertility risk factors have increased nowadays. Therefore, it is important to search for, prevent and manage these risk factors. This study aimed to explore the knowledge of men and women patients regarding risk factors of infertility in Duhok city.

Methods: This cross-sectional study was conducted on 501 patients who attended one tertiary governmental hospital in vitro fertilization department and three primary health centers in Duhok city from 1st November 2019 to 15th February 2020. The data collection which included the interviewing questionnaire about the knowledge of men and women about infertility risk factors. These data were categorized into two sections. The first section is about sociodemographic data. The second section is about infertility risk factors. The mean value of the total correct answers of the participants was considered the level of knowledge for male and female participants.

Results: The age of the participants ranged between 18-70 years. The participants were males (53.7%) and females (46.3%). The overall knowledge about the risk factors of infertility was 50.51%. The participants reported that stressful life (77.8%), continuous use of anabolic steroids (67.3%), working in petrochemical industries (69.9%), and continuously wearing tight clothes can cause infertility (63.3%), and these results have statistically significant values. While they reported that continuous exposure to high light intensity (29.7%), prolonged standing (33.1%), continuous contact with chlorine in the swimming pool (30.9%), cosmetic products (24.2%), excessive chlorine in drinking water cause infertility (29.7%) and these results have no statistically significant values.

Conclusions: This study showed that patients have an acceptable level of knowledge about infertility risk factors.

Keywords: Knowledge, Infertility, Risk factors.

Introduction

Infertility is a prevalent problem in our society especially among those postpone childbearing to their late reproductive years, possibly for a proper career. Providing facilities that enable women to have motherhood role along with careers could possibly diverse this alarming increasing trend of infertility.¹ The knowledge of fertility health problem may assist the individuals to prevent infertility in the first step. The preventive knowledge for infertility is advice about the role of

treatable sexually transmitted diseases (STDs) in infertility.² Some other studies reported that people overestimate the pregnancy chances at the time of ovulation.³ In addition, people have a low level of awareness about the time of fertility and about the infertility treatment, most of the people are aware of In vitro fertilization IVF.⁴ The human has faced hundreds of new chemical products in the environment with the possible contamination effect on the ecology in

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various ways.⁵ These products could have different effects on the human body; including damage to the reproductive tissues.⁶⁻⁸ In addition, some other factors could have a role in infertility development in humans; including rising body temperature.⁹ Continuous mobile phone signals exposure.¹⁰ Heavy workload.¹¹ Stress and anxiety.¹² Exposure to high light intensity, air pollution, drinking low quality of water, depending on fast food eating most of the time and continuous using a microwave oven.¹³ All of these chemical products and factors played a role in the increasing infertility all over the world every year. People need to raise their awareness in order to avoid these risk factors. Infertility is a global public health problem that affects more than 10% of the world's population.¹⁴ In the United States alone; almost seven million people are affected by infecundity. The prevalence of infertility is even higher in undeveloped countries with evidence suggesting that basic knowledge pertaining to the causes of infertility and potential treatment options lacking.¹⁴ University students' lack of knowledge about family planning, effects of age and sexual intercourse timing on infertility was remarkable. However, it was determined that the knowledge level of infertility risk factors related to substance use and body mass index was high. It is believed that increasing the level of knowledge about infertility among individuals will positively affect their awareness of risk factors and facilitate their search for timely medical assistance. Sexual health education can be effective in increasing

Patients and methods

This cross-sectional study was conducted in 501 patients who attended one tertiary governmental hospital at IVF department and three primary health centers in Duhok city from 1st November 2019 to 15th February 2020. The data collected by interviewing questionnaire, a sample of 501 participant patients entered in excel program transferred to SPSS 25 program

university students' knowledge of infertility.¹⁵ Most women (59%) were aged between 20 to 30 years indicating concern about their fertility and need for evaluation. More than half (63%) women were from the middle socio-economic strata. Knowledge about fertility and reproduction was low: 85% were not aware of the ovulatory period in the menstrual cycle, only 8% considered age more than 35 years as the most significant risk factor for infertility and most were unaware of when to seek treatment for infertility after trying for pregnancy. Less than half of women understood the need for assisted fertility treatment and donor oocytes in advanced age in a cross-sectional study about fertility awareness and knowledge among Indian women attending infertility clinic in India.¹⁷ Most men (88.5%) considered themselves to be somewhat, very or extremely knowledgeable about male reproduction and fertility. Although 35.8% of men had at least some concerns about their fertility, only 13.6% had undergone fertility assessment, and 8.8% had experienced fertility treatment. A small number of men (8.8%) were unaware that male factors can contribute to a couple's infertility in a population-based survey examining the awareness of factors that are associated with male infertility in Canada.¹⁸ This study aimed to explore the knowledge of male and female patients towards risk factors of infertility in Duhok city. Besides, the association of knowledge score with sociodemographic information characteristics was examined in this study.

to get analysis used t-test and ANOVA-one way. A p-value less and equal to 0.05 regarded as statistically significant. The information of the study was categorized into two sections: Section1: The sociodemographic information of the study was age, gender, educational levels, occupation, smoking, alcohol, residential area and marital status. Section 2: The risk

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factors of infertility were reported like cigarette smoking, alcohol drinking, wearing tight clothes, high light exposure, high temperature exposure and etc. The risk factors were drawn from the previous studies in the literature (Iranian Journal of Health, Safety and Environment)¹³ The questions were answered as Yes or No. The descriptive characteristics of the participants were presented in mean and standard deviation or number and percentage. The number of correct answers was determined in number and percentage for each item of knowledge. The mean value of the total correct answers of the participants was considered the level of knowledge for male and female participants. The comparison of the mean value of correct answers between male and female participants was examined in an

independent t-test. The correlation of the mean value of correct answers with male and female participants was examined in bivariate correlation. Also, the comparison of the mean value of correct answers among male subjects with different characteristics was examined in an independent t-test or ANOVA-one way. The significant level of difference was determined in a p-value of equal or less than 0.05. The statistical calculations were performed by Statistical Package for Social Sciences version 25 (SPSS 25, IBM Corp; US). The ethical approval of this investigation was obtained from the Kurdistan Higher Council of Medical Specialties. The confidentiality of the personal information of the patients was protected throughout the study steps and verbal consent was obtained from them.

Results

The age of the participants ranged between 18 and 70 years with mean \pm SD was 32.82 ± 9.69 . The participants were males (53.7%) and females (46.3%). Most of the participants from urban area (64.5%) and had college and postgraduate degrees

(29.5%). The participants were employees (42.7%) and were married (65.1%). The mean cigarettes smoked were 16.48 cigarette/day and mean alcohol consumed was 1.17 bottles of beer/day. See Table (1)

Table (1): Sociodemographical information of the participants

Characteristics (n=501)	Mean	Sta. Deviation
Age (range: 18-70 years)	32.82	9.69
	No.	%
Gender		
Males	269	53.7
Females	232	46.3
Residential Area		
Urban	323	64.5
Rural	178	35.5
Education		
Illiterate	37	7.4
Read and Write	45	9.0
Primary School	59	11.8
Intermediate School	62	12.4
Secondary School:	66	13.2
Institute	84	16.8
College and Post Graduate	148	29.5
Occupation		
Housewife	91	18.2
Student	64	12.8
Employee	214	42.7
Free work	131	26.1

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Retired	1	0.2
Marital status		
Single	168	33.5
Married	326	65.1
Divorced	5	1.0
Widowed	2	0.4
Smoking		
Yes	86	17.2
No	415	82.8
Cigarette/day (Range: 3-80)	Mean: 16.48	SD: 5.41
Alcohol		
Yes	40	8.0
No	461	92.0
Alcohol intake (bottle/day): (Range: ¼-2)	Mean: 1.17	SD: 0.64

Out of (501) participants in present study express their knowledge regarding the risk factors (24 items) in infertility as follows as a high rate, the stressful life (77.8%), continuously using anabolic steroid (67.3%), working in petrochemical industries (69.9%), and continuous wearing tight clothes (63.3%) as showed in Table (2). But in low rate or a low

percentage reported that continuous exposure to high light intensity (29.7%), prolonged standing (33.1%), continuous contact to chlorine in swimming pool (30.9%), cosmetic products (24.2%), and excessive chlorine in drinking water (29.7%) can cause infertility as showed Table (2).

Table (2): Percentage of correct answers towards infertility risk factors questions (males and females)

Knowledge items (n=501)	No.	%
Continuous exposure to high temperature can cause infertility	213	42.5
Continuous exposure to cellphone radiation can cause infertility	265	52.9
Continuous exposure to high light intensity can cause infertility	149	29.7
Continuous exposure to air pollution can cause infertility	284	56.7
Continuous low-quality drinking water can cause infertility	222	44.3
Depending on fast food at a most time can cause infertility	255	50.9
The stressful life can cause infertility	390	77.8
Strenuous exercise can cause infertility	228	45.5
Continuous microwave oven use can cause infertility	200	39.9
Continuous using anabolic steroid can cause infertility	337	67.3
Working in petrochemical industries can cause infertility	350	69.9
Prolong standing can cause infertility	166	33.1
Continuous contact to chlorine in the swimming pool can cause infertility	155	30.9
Smoking is a risk for infertility	366	73.1
Alcohol is a risk factor for infertility	355	70.9
Strenuous activity can cause infertility	209	41.7
Cosmetic product is a risk for infertility	121	24.2

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Continuous wearing tight clothes can cause infertility	317	63.3
Excessive chlorine in drinking water cause infertility	149	29.7
Continuous exposure to telecommunication towers cause infertility	292	58.3
Excess use of laptop can cause infertility	235	46.9
Continuous exposure to pesticides can cause infertility	239	47.7
Continuous exposure to foot preservatives can cause infertility	208	41.5
Continuous exposure to some medical drugs can cause infertility	368	73.5
Overall knowledge		50.51

The different between the mean score of male of knowledge towards risk factors of infertility (12.45) and female (11.66) is

significant according to p-value (0.037). See Table (3).

Table (3): Comparison of the mean value of correct answers between male and female participants

Knowledge	Gender		p-value
	Male	Female	
Mean score of Correct Answer	12.45 ± 3.92	11.66 ± 4.39	0.037

An independent t-test was performed for statistical analysis.

The study did not find the significant difference in the mean score of infertility risk factors in male participants who live in different residential areas (p=0.233),

with different educational levels (p=0.616), occupations (p=0.144), marital status (p=0.295) and smoking (p=0.807). See Table (4).

Table (4): Comparison of the mean value of correct answers among male subjects with different characteristics

Characteristics (Male participants)	N	Mean score of Correct Answer		p-value
		Mean	Std. Deviation	
Residential Area				
Urban	151	12.20	3.93	0.233*
Rural	118	12.78	3.91	
Education				
Illiterate	20	10.80	3.71	0.616**
Read and Write	24	12.29	3.45	
Primary School	27	12.78	2.64	
Intermediate School	32	12.41	3.52	
Secondary School:	36	12.69	3.45	
Institute	46	12.48	3.78	
College and Post Graduate	70	12.60	4.28	
Occupation				
Housewife	3	7.67	5.03	0.144**
Student	34	12.91	3.76	
Employee	109	12.58	4.11	
Free work	109	12.28	3.12	
Retired	1	16.00	.	

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Marital Status				
Single	96	12.45	3.56	0.295**
Married	163	12.37	4.12	
Divorced	2	16.00	0.00	
Widowed	1	18.00	.	
Smoking				
Yes	76	12.54	3.97	0.807*
No	186	12.41	3.91	
*Independent t-test and **ANOVA one-way was performed for statistical analyses.				

There was no significant difference in the mean score in female participants who live in different areas ($p=0.200$), have different education levels ($p=0.336$), and habits of smoking ($p=0.369$). The female widowed

participants had significantly higher knowledge scores (M: 20.0) compared to a single (M: 11.79), married (M: 11.66), and divorced (M: 6.33; $P=0.043$). See Table (5).

Table (5): Comparison of the mean value of correct answers among female subjects with different characteristics

Characteristics (Female participants)	N	Mena score of Correct Answer		p-value
		Mean	SD	
Residential Area				
Urban	168	11.89	4.46	0.200*
Rural	64	11.08	4.20	
Education				
Illiterate	15	11.87	5.38	0.336**
Read and Write	18	11.17	4.29	
Primary School	27	10.85	3.76	
Intermediate School	29	10.21	4.46	
Secondary School:	29	11.66	4.78	
Institute	38	12.00	4.36	
College and Post Graduate	76	12.42	4.23	
Occupation				
Housewife	88	10.50	4.65	0.011**
Student	29	11.76	4.29	
Employee	103	12.46	4.09	
Free work	12	13.17	3.61	
Marital status				
Single	70	11.79	4.41	0.043**
Married	158	11.66	4.30	
Divorced	3	6.33	5.03	
Widowed	1	20.00	.	
Smoking				
Yes	8	10.63	2.97	0.369*
No	223	11.66	4.41	
*Independent t-test and **ANOVA one-way was performed for statistical analyses.				

Discussion

The present study revealed that most of the participants answered correctly regarding the following infertility risk factors: stressful life (77.8%), continuous using

anabolic steroids (67.3%), excess alcohol consumption (70.90), working in petrochemical industries (69.9%), and continuously wearing tight clothes as a

cause of infertility (63.3%). However, a low percentage of the participants answered correctly regarding the following infertility risk factors: continuous exposure to high light intensity (29.7%), prolong standing (33.1%), continuous contact to chlorine in swimming pool (30.9%), cosmetic products (24.2%), and excessive chlorine in drinking water as a cause infertility (29.7%). The overall knowledge of the participants in this study was 50.51%. A survey collected the awareness of infertility risk factors in 170 persons; including 62 men and 108 women in Iran. They reported that the average of infertility awareness for men and women is 38% and 49%, respectively with overall awareness of 44.0%, and this is because of the difference in culture and educational level between the two countries. The study revealed that awareness of women about mobile radiation and fast foods affecting fertility is higher than men. But the awareness of men about the adverse effects of swimming in a chlorine pool on fertility was higher compared to women. They reported that higher knowledge of women could be related to the sensitivity of fertility. The higher level of awareness of the participants about infertility risk factors was about mobile radiation, air pollution, stress, fast foods, smoking and alcohol. In contrast, we found a higher level of knowledge about the infertility risk factors in males compared to females. However, their awareness level was not associated with socio-demographic aspects.¹³ In agreement; the present study found that females have more correct answers about the risk factors compared to the males. In consistence with the results of the present study, a study conducted in 508 college students aged 16 years and older on the island of Grenada reported that the participants have a moderate level of knowledge in males and females about the risk factors of infertility. They believed that infertility may be caused by God's will (73.0%) and close to 58% believed in the power of prayer to treat infertility and

for this issue their study percentage results are different from our study.¹⁴ The present study found that 70.9% and 73.1% of the participants reported that alcohol and smoking are risk factors for infertility, respectively. In consistent, a study conducted in Turkey reported that 62.8% and 75.8% of the university students reported that alcohol and smoking use may cause infertility, respectively.¹⁵ and this different related to the different level of education. A study was conducted in Iraq about infertility awareness in 150 medical and non-medical undergraduate students at Al-Iraqia University. The study reported higher infertility awareness in non-medical compared to medical students.¹⁶ The major factors reported by the students as risk factors of infertility were smoking and alcohol by medical students and caffeine and diet by non-medical students.¹⁶ A study evaluated fertility knowledge and awareness in infertile women in India. The study which revealed that 59.0% had a concern about their fertility status and 63.0% of them were from middle socio-economic state. They had a very low level of knowledge about fertility and reproduction; 85.0% were unaware of the ovulatory period in the menstrual cycle. In addition, only 8.0% considered age as the most common risk factors of infertility, and these points make our study different from theirs.¹⁷ A study included 149 female and male postgraduate and undergraduate university students and assessed the fertility knowledge. They reported that smoking more than 20 cigarettes per day; drinking more than 14 units of alcohol per week; and a stressful life reduce the fertility. In addition, they reported that being over 45 years old is a risk factor for fertility.² In present study not include a question about the effect of age in this study. Close of half of the participants of present study reported that strenuous exercise is a risk factor for infertility. However, Bunting and Boivin (2008) reported that less than 7 minutes of exercise per day reduce fertility.² A similar

study conducted in Canada included 401 male persons aged 18-50 years old to report the knowledge of males about infertility. They reported that Long-term use of steroids (77.8%); Smoking cigarettes (67.8%); Alcohol consumption (>10 drinks a week) (63.2%); and exposure to radiation or chemotherapy (76.6%) are risk factors of infertility as reported by male participants, and this different from current study related to different level of knowledge between Iraq and Canada.¹⁸ There were significant differences in the knowledge of those female participants with different occupations and marital status, as the present study found that females with free work or employment have a higher

Conclusions

Most of the participants know about infertility risk factors regarding stressful life, continuous using anabolic steroids, working in petrochemical industries, and continuously wearing tight clothes. However, a low percentage of the participants know about infertility risk factors regarding continuous exposure to

Conflicts of interest

The author reports no conflicts of interest.

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knowledge level compared to those who were housewives or students. The possible reasons are that the employees have a higher educational level compared to other occupational groups. These results are consistent with result of study conducted in Iran.¹³ In the present study, widowed women had a significantly higher level of awareness of the risk factors of infertility this goes with result of study which was done in Turkey.¹⁵ The higher knowledge of widowed women could be due to this fact that they have experienced the child-bearing stage. Iraq is considered to be a society with high fertility; therefore, infertility may lead to divorce or separation.¹⁹

high light intensity, prolong standing, continuous contact to chlorine in swimming pool, cosmetic products, and excessive chlorine in drinking water. There were significant differences in the knowledge of females with different occupations and marital status.

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