Risk Factors of Infertility Among Young Women at Al-Najaf City

Abeer Miri Abdullah, M.Sc.[*], **Shukriyia Shadhan Chyad Al- Ogaili, Ph.D.** [**]

[*]M.Sc.Maternity Nursing, Faculty of Nursing, University of Kufa.
[**]Assist. Professor, Maternity Nursing, Health and Medical Collage Techniques, University of Al-Forat Al-Awsat - Iraq.

Abstract- **Objective:**this study aimedto identify risk factors of infertility among young womenand to find out relationship between demographic and reproductive data with infertility.**Methodology**: A descriptive case-control study was adopted in order to achieve the stated objectives. The study began from November 2nd , 2015 until August, 18th, 2016.A Non-Probability (Purposive Sample) of (100) infertile women as case group who were selected from fertility center, and (100) healthy women as control group those who visit primary health care center, both infertile and healthy women are involved in the sample of study. Reliability of instrument is determined via the use of test and re-test technique, and the instrument validity is determined via a panel of experts. Data was analyzed by usingdescriptive and Inferential data analysis.**Results**: the results found that the most common type of infertility is primary infertility. The majority of infertile women are from urban residential area while the majority of fertile women are from rural area, also infertile women had got married early as compared with fertile women. Most women have menarch ≤ 15 , many women from study group have menstrual cycle irregularities polycystic ovarian syndrome, problems of egg quality and tubules occlusion.**Conclusion:**The study concludes that among the risk factors of female infertility: residency, previous births by caesarean section (for cases of secondary infertility), and polycystic ovarysyndrome, family history of infertility. **Recommendation**: The study recommends that a population-based study should be conducted to increase the women awareness about the risk factors of infertility especially among young girls and how to avoid such factors.

Index Terms- Risk factor, Infertility, Youngwomen.

I. INTRODUCTION

Infertility is a global public health issue[1]. Infertility is a common condition affecting one of six couples during their reproductive lifetime [2]. Infertility affects approximately 60-80 million couples around the world and is still increasing. A demographic study done in 2002 by the World Health Organization (WHO) on developing countries (except China) indicated that 186 million women have been infertile [3],[4].The prevalence of current infertility in developed and less developed countries, based on a systematic review, was between 3.5-16.7% and 6.9-9.3% respectively .Also it is 9% in china , in America 10-15%, in Siberia about 16% and in Australia 19%. Infertility is not merely a health difficulty but also a social and emotional difficulty, especially in some cultures and sometimes it leads to divorce [4].The WHO has suggested the definition of infertility as failure of a couple to conceive within two years of unprotected sexual intercourse. Clinical studies commonly use a one- year period for defining infertility, While, other studies use a period of 5 years. Global, an predictable 580 million people (about 5-8% of couples) suffer from infertility, approximately 372 millions of people exist in low- and middle-income nations, with the exception of China .So, infertility is more widespread in low-income than in high- income countries. There is in Africa, a high percentage of infertility (about 10.1% of people) have infertility with increasing rate about 32% in some region within Africa [5]. Reproduction and raising of children are very important happenings in every individual's life and are powerfully connected with the eventual aims of fullness, pleasure and family incorporation. It is extensively recognized that human presence reaches wholeness through a child and accomplishes the person's need for childbearing[6]. For numerous couples, failure to have a baby is a catastrophe. The gathering of personal, interpersonal, social, and religious prospects brings a feeling of failure, loss, and prohibiting to those who are childless. Dealings between couples can become very stressed when children are not upcoming. Socially, most societies are systematized, particularly in the undeveloped countries, such that children are needed for care and looking after for parents when they become elderly. Even in an advanced countries with social support systems, children and family are needed to offer much of the attention for the elderly. Infertile couples are also omitted from taking principal roles in an essential family jobs and events such as birthdays and marriages of their children. Moreover, many religions assign important formal responsibilities to the couple's children [7]. Infertile women are often branded, resulting in loneliness, carelessness, domestic violence and bigamy [8].

II. METHODOLOGY

Design of the Study:A descriptive case-control study was adopted in order to achieve the stated objectives. The study began from November 2nd , 2015 until August, 18th, 2016. A Non-Probability (Purposive Sample) of (100) infertile women as case group who were selected from fertility center, and (100) healthy women as control group those who visit primary health care center, both infertile and healthy women are involved in the sample of study.the researcher apply the following criteria in selecting the study sample:

- The age of the all participants between (17-24) years old.
- In case group only female factor infertility is selected.

- In control group include women who have one or two child but without using any assistance reproductive technologies.

The study instrument is constructed by the researcher to assess the risk factors of infertility. The complete instrument of study consists of (3) parts:

Part 1: Sociodemographic Data :

This part consists of (5) items, which includes age, residency, level of education, occupational status and socioeconomic status .

Part 2: Medical and Surgical History:

This part consists of (3) items, include family history of infertility, chronic disease and history of previous surgery .

Part 3: Reproductive History:

This part consists of (12) items, including the duration of infertility, type of infertility, previous history of abortion, ectopic pregnancy, age of menarche, age at marriage, regularity of menstrual cycle, history of using family planning, sexual activity at fertility days of ovulation cycle, using of ovarian inducer medication, using of reproductive technologies, gynecological disease.

Statistical Analysis

The following statistical data analysis approaches used in order   to analyze the data of the study under application of the statistical package (SPSS) ver. (19), and the Microsoft excel (2010):**Adescriptive data analysis** includes a-Tables (Frequencies, Percentages), b Summary Statistics tables including Mean, and Standard Deviation (SD), c- Pearson's Correlation Coefficients to determine the reliability of the study instrument, and **Inferential Data Analysis includes** Independent sample t-test to determine the mean difference between the case and control groups.

Objective of the study:

This study aimed to identify risk factors of Infertility among   young women, To identify demographic   and reproductive variables related to women' s infertility and To find out relationship between demographic and reproductive data with infertility.

III.   RESULTS

Table (1): Statistically Distribution of the Study Sample by their Socio-Demographic Data

Items	Rating and Intervals	Study group		Control group	
		Freq.	%	Freq.	%
Age / Years	<= 20.00	20	20	30	30
	21.00+	80	80	70	70
Residency	Rural	28	28	64	64
	Urban	72	72	36	36
Levels of Education	Illiterate	22	22	22	22
	read and write	18	18	30	30
	Primary school graduated	24	24	12	12
	Secondary school graduated	26	26	24	24
	Institute or above	10	10	12	12
Occupation Status	Housewife	92	92	98	98
	employee	8	8	2	2
Socio-Economic Status	Sufficient	26	26	22	22
	Sufficient to what limits	44	44	54	54
	insufficient	30	30	24	24
Passive Smoking	Yes	76	76	60	60
	No	24	24	40	40
BMI	Underweight	4	4	42	42
	Normal Weight	26	26	0	0
	Overweight	32	32	24	24
	Obese	38	38	34	34
Taking of Caffeine	Yes	82	82	84	84
	No	18	18	16	16
Number of Cups / day	1	38	38	36	36
	2	22	22	18	18

	3	10	10	18	18
	4	4	4	10	10
	5	4	4	0	0

Table (1) shows that the majority of the study group are 21 years old and more (80%). Urban residents (72%), secondary school graduated (26%), housewives (92%), socio-economically are sufficient to what limits (44%), passive smokers (76%), obese (38%), taking a caffeine (82%), and taking about 1 cup daily (38%). While for the control group, the study results indicate that the majority of the control group are (21) years old and more (70%). Rural residents (64%), read and write (30%), housewives (98%), moderate socio-economic status (54%), passive smokers (60%), underweight (42%), taking a caffeine (84%), and taking about 1 cup daily (36%).

Table (2): Statistically Distribution of the Study Sample according to Medical and Surgical History for Women

Items	Rating And Intervals	Study Group		Control Group	
		Freq.	%	Freq.	%
Family history of infertility	Positive	20	20	4	4
	Negative	80	80	96	96
Previous Diseases					
Diabetes mellitus	No	100	100	100	100
Hypertension	No	100	100	100	100
Thyroid diseases	No	100	100	100	100
Tuberculosis	No	98	98	100	100
	Yes	2	2	0	0
Previous Surgeries					
Previous surgeries	Yes	28	28	44	44
	No	72	72	56	56
Site of surgeries	Abdomen	28	28	44	44
Duration since surgeries	1-2	12	12	36	36
	3-4	16	16	8	8
Appendectomy	Yes	4	4	8	8
	No	96	96	92	92
Caesarian section	Yes	16	16	38	38
	No	84	84	62	62
Fallopian tubules surgeries	Yes	4	4	0	0
	No	96	96	100	100

Table (2) shows that both study and control groups have no positive family history of infertility (80% and 96%) respectively. In addition, the entire study and control groups participants (100%) have no diabetes mellitus, hypertension, thyroid diseases, and only (2%) of the study group have tuberculosis. Regarding to the previous surgeries, the study results indicate that there is a no previous surgeries at the majority of the study and control groups' participants (72 % and 56 %) respectively.

Table (3): Statistically Distribution of the Study Sample according to Reproductive characteristics

Factors	Rating And Intervals	Study Group		Control Group	
		Freq.	%	Freq.	%
Age of marriage	12-15	40	40	22	22
	16-19	48	48	54	54
	20 and more	12	12	24	24
Menarche	10-15	94	94	98	98
	16 and more	6	6	2	2
Cycle	Regular	58	58	92	92

	Irregular	42	42	8	8
Type of infertility	No infertility	0	0	100	100
	Primary	60	60	0	0
	secondary	40	40	0	0
Duration infertility	No infertility	0	0	100	100
	1-3	38	38	0	0
	4-6	44	44	0	0
	7 and more	18	18	0	0
Abortion	Yes	32	32	42	42
	No	68	68	58	58
Ectopic	Yes	4	4	0	0
	No	96	96	100	100
Contraceptive	Yes	4	4	22	22
	No	96	96	78	78
Sexual relationship	Yes	58	58	28	28
	No	42	42	72	72
Use of Inducer ovulation medication	Yes	90	90	26	26
	No	10	10	74	74
IVF	Yes	24	24	0	0
	No	76	76	100	100
Results	NO	76	76	100	100
	Positive	10	10	0	0
	Negative	14	14	0	0
IUI	Yes	28	28	0	0
	No	72	72	100	100
Results	No	72	72	100	100
	Positive	4	4	0	0
	Negative	24	24	0	0
Endometriosis	Yes	2	2	0	0
	No	98	98	100	100
PCOS	Yes	56	56	2	2
	No	44	44	98	98
Genitourinary infection	Yes	74	74	84	84
	No	26	26	16	16
Congenital Malformation	Yes	4	4	0	0
	No	96	96	100	100
Genital Viral infection	Yes	2	2	0	0
	No	98	98	100	100
Genital Fungal infection	Yes	60	60	48	48
	No	40	40	52	52
Problems of Quality of Egg	Yes	70	70	28	28
	No	30	30	72	72
Problems of Quality of Cervical mucosa	Yes	2	2	0	0
	No	98	98	100	100
Prolactin hormone elevation	Yes	56	56	0	0
	No	44	44	100	100
Tubular occlusion	Yes	18	18	0	0
	No	82	82	100	100

Table (3) shows that the age of menarche is 10-15 years in both study and control groups (94% and 98%) respectively. Regarding menstrual cycle, the study results indicate that (58%) is for regular menstrual cycle among study group, and (92%) at the control group. In addition, (16-19 years old) is the dominant age of marriage group between both study and control groups (48 % and 54 %) respectively. In addition, the study results indicate that (60%) is for primary infertility among the study group, and (44%) is for 4-6 years as a duration of infertility. Concerning abortion, the study results indicate that there is no abortion between both study and control groups (68 % and 58 %) respectively, also for ectopic pregnancy, the study results show that there is no ectopic pregnancies in both study and control groups (96% and 100%) respectively. Furthermore, in both study and control groups there is no use of contraceptive (96% and 78%) respectively. In addition, the study results indicate that (58%) of the study group perform the sexual relationship with the ovulation time, while (72%) of the control group did not perform the sexual relationship. Regarding use of inducer medications, the study results indicate that (90%) of the study group use these medications, while (74%) of the control group did not use these medications. Concerning IVF and IUI, the study results indicate that the study and control groups did not perform these techniques. Regarding endometriosis, the study results indicate that the majority of the study and control groups subjects have no endometriosis (98% and 100%) respectively. In addition, the study results indicate that (56%) of the study group have PCOS, while (98%) of the control group have no PCOS. Also the study results indicate that both study and control group have genitourinary infection (74% and 84%) respectively, while both study and control groups have no congenital malformation (96% and 100%) respectively. In addition, the majority of the study and control groups have no genital viral infections (98% and 100%) respectively. In addition, the study results indicate that the majority of the study and control groups have no problems with cervical mucosa (82% and 100%) respectively, have no tubular occlusion (82% and 100%) respectively. While the majority of study group have problems with quality of eggs (70%) and elevation in prolactin hormone (56%).

Table (4):Comparison significant between study and control groups regarding infertility risk factors

Factors	Grouping	Mean	Std. Deviation	t-value	p-value
Age / years	study	22.06	1.82287	0.524	0.601
	control	21.86	1.98987		
Occupation	study	1.18	0.6289	1.436	0.154
	control	1.04	0.28284		
Levels of education	study	2.84	1.307	0.530	0.575
	control	2.74	1.363		
Socio-economic status	study	2.04	0.759	0.197	0.844
	control	2.02	0.688		
Passive smoking	study	1.24	0.43142	1.723	0.088
	control	1.4	0.49487		
BMI	study	28.0482	4.76331	0.977	0.331
	control	27.142	4.50393		
Caffeine	study	1.18	0.38809	0.264	0.793
	control	1.16	0.37033		
How many Cups	study	1.74	1.58835	.135	0.893
	control	1.78	1.37455		
Previous Surgeries	study	1.72	0.45356	1.673	0.097
	control	1.56	0.50143		
Sites of surgeries	study	0.28	0.45356	1.673	0.097
	control	0.44	0.50143		
Appendectomy	study	1.96	0.19795	0.837	0.405

	control	1.92	0.27405		
Tubular surgeries	study	1.96	0.19795	1.429	0.156
	control	2	0		
Abortion	study	1.68	0.47121	1.031	0.305
	control	1.58	0.49857		
Ectopic pregnancy	study	1.96	0.19795	1.429	0.156
	control	2	0		
Use of Contraceptive	study	1.96	0.19795	0.264	0.793
	control	1.78	0.41845		
Age at Menarche	study	12.86	1.42871	.817	0.416
	control	13.08	1.25909		
Age at Marriage	study	16.6	2.40747	1.447	0.151
	control	17.32	2.56698		
Endometriosis	study	1.98	0.14142	1.000	0.32
	control	2	0		
G. Infection	study	1.26	0.44309	1.224	0.224
	control	1.16	0.37033		
Malformation	study	1.96	0.19795	1.429	0.156
	control	2	0		
G. Viral infections	study	1.98	0.14142	1.000	0.32
	control	2	0		
G. Fungal infections	study	1.4	0.49487	1.200	0.233
	control	1.52	0.50467		
Cervical mucosa	study	1.98	0.14142	1.000	0.32
	control	2	0		
Sexual relationship	study	1.72	0.49857	0.937	0.08
	control	1.42	0.45356		

Thetable above shows that there is a non-significant difference between the study and control groups regarding to their (age, occupation, passive smoking, BMI, , caffeine, number cups, previous surgeries, sites of surgeries, appendectomy, tubular surgeries, abortion, ectopic pregnancy, Use of Contraceptive, age at menarche, age at marriage, endometriosis, G. infection, malformation, G. viral infections G. fungal infections cervical mucosa and sexual relationship

Table (5):Factors associated with infertility

Factors	Grouping	Mean	Std. Deviation	t-value	p-value
Residency	study	1.72	0.45356	3.834	0.001
	control	1.36	0.48487		
Family history of infertility	study	1.96	0.40406	2.514	0.014
	control	1.80	0.19795		
Duration since surgeries	study	9.66	0.76024	3.181	0.002
	control	0.44	20.47957		
Cesarean section	study	1.84	0.37033	2.532	0.013
	control	1.62	0.49031		
Menstrual Cycle	study	1.42	0.49857	4.226	0.001
	control	1.08	0.27405		
PCOS	study	1.98	0.50143	7.329	0.001
	control	1.44	0.14142		
Quality of Egg	study	1.72	0.46291	4.583	0.001
	control	1.03	0.45356		

Tubular occlusion	study	2	0.38809	3.280	0.001
	control	1.82	0		

The results in table (5) show that there is a significant difference between the study and control groups regarding to family history of infertility and cesarean section .

In addition, the study results indicate that there is a high significant difference between the study and control groups regarding other variables.

IV. DISCUSSION

According to (table 1), the results of the study show that the majority of study and control group age is between (21-24) years. This result comes along with the result of a study done by **Omu and Alexander (2010)**conducted in Kuwait, where it showed that the age of 20-29 years old is the dominant age . This results may come because women in this age are more likely to be pregnant and this age group is a preferable for pregnancy, so they seeking for medical help. [9]

Relative to the residency, the present study shows that the majority of study group are living in urban residential area, while the majority of control group are from rural area. This result matches with the result of   **Saoji (2014)** who mentioned that most study group are living in urban residential area , while most control group are from rural area. This result may come due to women who live in urban more vulnerable to pollutants and chemicals   such as; polluted air from factories, vehicles and electric generators. In addition, frequent use of detergents, cosmetic and pesticides. [10]

About educational level, the present study indicates that the highest percentage of the study group graduated from secondary school, while in control group the highest percentage of sample able to read and write. This results are in agreement with **Shamila and Sasikala (2011)** in their study, they mentioned that there is high percentage of study sample with secondary school education[11]. Also they reported that " Women with secondary school education and above had markedly lower average fertility than the less educated".

In related to occupation the majority of study and control groups were housewives . This result comes along with **Mokhtar, et al., (2006)** in their study that the majority of study and control groups were housewives.Relative to the socio-economic status, high percentage of both study and control groups are with moderate socio-economic status[12]. This result supported by **Jumayev, et al. (2012)** in their study which indicated that the highest percentage of both groups have moderate   socio-economic   status[13].Regarding   to   passive smoking, the majority of study and control groups were exposed to passive smoking .This result agrees with **Amirkhani, et al. (2014)** who reported that "High percentage of case and control group were passive smokers". [14]

Concerning to body mass index, the highest percentage of study group are obese. This result agree with **Zeidan (2015)** in her study who mentioned that the majority of study group are obese[15]. While the majority of control group are underweight which agree with **Saoji (2014)** in their study which indicated that the majority of control groups are not obese[10]. Relative to

taking of caffeine, the study result shows that the   highest percentage of both groups are drinking caffeine one cup daily which agree with **Homan, et al. (2007)** who mentioned that "The majority of study sample drinking caffeine about (1-2) cups daily". Also the results may related to the Iraqis life style, so they like to drink caffeine daily especially at morning[16].

Regarding to (table 2) The results of the present study show that the majority of both study and control groups are with no family history of infertility and no previous diseases (DM, HTN, thyroid disease) except few number of study group have TB. This result comes along with **Mokhtar, et al. (2006); Elkhwsky and Ben Khaial (2009)** who mentioned that the majority of study and control group are with no family history of infertility and no previous diseases[12], [17]. The result of no having previous diseases was due to all study sample of young age ,and these diseases rarely affected young age.

Also the study results show that the majority of both groups have no surgeries, but high percentage of study and control group have abdominal surgery with duration between (3-4), (1-2) years respectively. This result agrees with **Mokhtar, et al (2006)** in their study who stated that " Most of study samples do not have any pelvic or abdominal surgeries but there is high percentage of both groups have abdominal surgery." [12]

In addition ,the control group have caesarian section more than study group. This result comes along with **Torres - Sánchez, et al. (2004)** in their study reported that" The distribution of caesareans were significantly lower among the cases, compared with controls." This result might be due to most Iraqi women now in this country preferred delivery by CS rather than vaginal to avoid the painful parturition.[18]

The present study in (table 3) indicates that the majority of both groups have menarche between (10-15) years, regular cycle (but high percentage of study group have irregular cycle), age at marriage between (16-19) . Also the majority of study group have primary infertility with duration between (4-6) years, these results are supported by **Mokhtar, et al. (2006); Saoji (2014) ; Mallikarjuna and Rajeshwari (2015)** in their study they mentioned that " The majority of study samples have menarche (≤15 years) , primary infertility, regular cycle but the highest proportion of case group have irregular cycle"[12]; [10]. Furthermore, the majority of both groups have no abortion ,ectopic pregnancy which disagree with **Torres - Sánchez, et al. (2004)** who stated in their study that " A history of ectopic pregnancy were more frequent among study group while, a history of abortion were lower among the cases, compared with controls".[18]

The present study shows that the majority of study group have Polycystic ovarian syndrome which is in agreement **with Elkhwsky and Ben Khaial (2009)** who demonstrated that" Polycystic ovarian syndrome (PCOS) was more frequent in case group compared to the controls".[17]

Similarly the majority of both groups have genitourinary and fungal infection which come along with **Mokhtar, et al. (2006) ;Saoji (2014)** who reported in their study that "Episodes of genital infection (irrespective of the type of micro-organisms

causing the infection) and its sequaelae as tubal fibrosis and obstruction are more frequent in an infertile women than healthy, which had a 10 fold risk of subsequent tubal infertility ". [12], [10]

Also the present study shows that the majority of study group have no endometriosis and do not use contraceptive methods which in consistency with **Elkhwsky and Ben Khaial (2009)** in their study who mentioned that most of study sample had no endometriosis and they did not use any contraceptive methods[17] .Furthermore, high percentage of both groups are perform sexual relationship at fertile days. This result agrees with **Mallikarjuna and Rajeshwari (2015)** in their study they stated that high percentage of both group perform sexual relationship at fertile days. [10]

In addition, this table shows that the highest percentage of study group have problems of egg quality. This result is due to most study group have PCOS that lead to decreased ovarian reserve and even decrease the quality of the egg cell. Also the majority of study sample have no problem of cervical mucus quality which agrees with **Masoumi, et al. (2015)** who stated that high proportion of study sample is with no problems of cervical mucus quality.[19]

In addition, the majority of study samplehave prolactin hormone elevation that comes along with **Mallikarjuna and Rajeshwari (2015)** in their study, they found that high percentage of study samplehave prolactin hormone elevation[10].Also the study group have high percentage of tubal occlusion that comes along with **Famurewa, et al. (2013)** who found that the majority of study group have tubal occlusion. [20]

Concerning the result in table (4.4) the present study shows that no significant differences between study and control groups regarding age and level of education. This result comes along with **Mallikarjuna and Rajeshwari (2015)** in their study, they found that the age and educational level have no association with female infertility.[10]

About occupation, the relationship between occupation and infertility is insignificant which agree with **Mokhtar, et al. (2006)** in their study they mentioned that no relationship between occupation and infertility [12]. Relative to socio economic status, no relationship between both groups regarding socio economic status and infertility that comes along with **Aflatoonian**, *et al.* **(2009)** in their study, they reported that the relationship between socio economic status and infertility is insignificant. [21]

Regarding to passive smoking, there is no significant difference between study and control group about passive smoking and infertility. This result disagrees with **Amirkhani, *et al*. (2014)** in their study they found that passive smoking increases the risk of infertility[14]. Relative to body mass index, no relationship between both groups regarding BMI and infertility which disagrees with **Saoji (2014)** who found that " Unhealthy weight gain can negatively impact the reproductive system, leading to difficulties in conceiving ".[10]

Regarding to drinking caffeine, the relationship between both groups is insignificant, this result agrees with **Pham, *et al*. (2002)** in their study, they reported that "Caffeine consumption was not associated with infertility"[22]. Regarding to the previous surgeries, sites of surgeries, there is no relationship between study and control group regarding previous surgeries, sites of surgeries. This result agrees with **Elkhwsky and Ben Khaial**

(2009) who mentioned in their study that, there is no relationship between previous surgeries, sites of surgeries and infertility. [17]
Relative to abortion and ectopic pregnancy, there is no relationship between the two groups and these variables, which disagree with **Torres - Sánchez, *et al*. (2004)** who mentioned in their study that " The relationship between both groups regarding ectopic pregnancy and abortion were significant"[18]. Concerning age at menarche, no significant associationbetween the study groups and age at menarche that comes along with **Mallikarjuna and Rajeshwari (2015)** who stated in their study " The relation between age of menarche and female infertility is insignificant"[10]. Also there is no relationship between two group regarding age at marriage which disagree with **Mokhtar, *et al.* (2006)** in their study that " The age of marriage is a significant predictor for primary infertility". This result may be due to all study sample are at young age.[12]

Relative to endometriosis, no association between study and control regarding endometriosis and infertility which disagrees with **Saoji (2014)** who found thatendometriosis is a risk factor for primary infertility[10]. Regarding to G. infection (viral infections and fungal infections), no significant difference between study and control groups relative to infection which disagree with **Elkhwsky and Ben Khaial (2009)** who found that" Genital infection irrespective to the causative agents is strongly associated with infertility". [17]

In table (5) the present study indicates that there is a high significant of infertility among women who lived in urban area compared with control group, this result agrees with **Saoji (2014)** in their study as they reported " Living in urban areas was significantly associated with infertility"[10]. This result might come due to women who live in urban more vulnerable to pollutants and chemicals such as; polluted air from factories ,vehicles and electric generators, in addition frequent use of detergents, cosmetic and pesticides.

Furthermore there is a significant difference between the study and control groups regarding family history and cesarean section with its duration which is supported by **Mallikarjuna and Rajeshwari (2015); Mokhtar *et al*. (2006)** " There was significant association between study and control group regarding history of previous surgical operations such as abdominal surgery and positive family history of infertility with occurrence of infertility".[10] ,[12]

In addition, the study results indicate that there is a high significant difference between the study and control groups regarding menstrual cycle irregularity and PCOS which is in agreement with **Shamila and Sasikala (2010)** who mentioned in their study that " there was a high association between PCOS ,irregular cycle and infertility. Also there is high significant difference about egg quality problems between study and control groups, this result is due to most study group have PCOS that result in poor egg quality.[11]

In addition, this table shows strong association between both study groups for tubular occlusion and infertility that comes along with **Famurewa, *et al*. (2013)** who found that "There was strong association between fallopian tubes obstruction and infertility"[20]. Also highly significant difference for prolactin hormone, which is supported with **Mallikarjuna and Rajeshwari (2015)** who mentioned that " Prolactin hormone

elevation   is a significant risk factor contributing to infertility " [10].

V.   ETHICAL CONSIDERATION

This is one of the most basic principles before gathering the data, to keep the patient's values and self-respect. The researcher achieved this agreement from the Ethical committee at the Faculty of Nursing / University of Kufa (Appendix-B). The researcher promised to keep the patient's information confidential, and use these data for this study only then he explained the purpose of this study to each participant without affecting the routine visiting and care. In addition to above the researcher told each participant that this is voluntary work, and they can leave any time even the interview process is not completed.

VI.   CONCLUSIONS

According to the study findings and discussion, the study concluded the following:

1. Women from urban residential areas are more risky for infertility as compared with rural residents.
2. Family history is one of the risk factors for infertility.
3. The study indicates that   most women have menarch ≤ 15.
4. The most common type of infertility is Primary infertility.
5. The study concludes that the study group have a significant higher duration since surgeries as compared with those in control group.
6. Infertile women are marry early as compared with fertile women.

VII.   RECOMMENDATIONS

Based on the study results discussion and conclusions the study recommended that:

1. A population-based study should be conducted to increase women's awareness about the risk factors of infertility especially among young girls.
2. Ministry of Health should employ a mass media to increase women' awareness about the risk factors of infertility and how to avoid such factors.
3. Further studies should be made to find the national prevalence of the risk factors of infertility among Iraqi women.

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AUTHORS

First Author – Abeer Miri Abdullah, M.Sc, Maternity Nursing, Faculty of Nursing, University of Kufa.

Second Author – Shukriyia Shadhan Chyad Al- Ogaili, Ph.D., Assist. Professor, Maternity Nursing, Health and Medical Collage Techniques, University of Al-Forat Al-Awsat - Iraq.