Association between Abnormal Lipid Profile With Causes And Risk Factors In Infertile Iraqi Women: Rehabilitation Study

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Abstract:

Background; A global problem that affects people all over the world, infertility can have different causes and levels of relevance depending on one's region and socioeconomic status. The first step in preserving pregnancy power in lifestyle adjustment is awareness of infertility, therefore the aim of current study to investigation the association between risk factors, causes and Lipid Profile in Iraqi infertility women.

Patients and Method: A cross-sectional study was conducted Kamal Al-Samaraee hospital from November 2021 to May 2022. One hundred and sixty-five individuals, including 115 infertile women and (50) control (healthy reproductive women), The lipid profiles were examined.

Results: current study showed primary infertility 77 (66.9%) more than secondary infertility 38 (33.1%), Also women between the ages of 25- 35 years were the most infertile, as well as about 42 (36.64%) infertility women were Illiteracy, while 25 (21.7%) and 19 (16.6%) held secondary and primary degrees, respectively. In addition, 53 (46.1%) were normal, compared to obese and overweight infertile women, 32 (27.8%) and 30(26.1%), respectively. also 69(60%), of the infertility women lived in Urban compare to rural 46(40%), ,so 77(66.1%) Wife's good relationship with her husband,as well as current results primary infertility increased to 21 (18.3%) from 16 (13.9%) secondary infertility, and between two and three years, primary infertility increased to 45 (39.13%) from 12 (10.4%) secondary infertility. Additionally, primary infertility was associated with a higher BMI (27.23±6.61) than secondary infertility (22.73± 1.78), also main causes of infertility in Iraqi infertility women were Hormonal problems and PCO 18.3%, as well as 10.4 % unknown ,9.6 % follicle problems , so infertility women had levels of triglycerides(161.5 ± 82.6) and LDL (112.4 ± 33.4) that were higher than control (healthy), but less than control for total cholesterol (85.13 33.1) and HDL (42.34 ± 8.8).

Conclusion: Primary Infertility more than secondary, so most infertile women between the ages of 25-35years , as well as about 42 (36.64%) infertility women were Illiteracy, followed secondary and primary degrees, so infertility women lived in rural more than urban. Also primary infertility was associated with a higher BMI than secondary, and the main causes of infertility were Hormonal problems and PCO, infertility women had high levels of triglycerides and LDL, but less than control for total cholesterol and HDL. termination of serum lipid profile Serum Lipid Profile was measured by Spectrophotometer using a kit provided by Linear Chemicals S.L Spain. (http://www.linear.es), or colorimeter capable of measuring absorbance at 500 ± 10 nm Determination of serum lipid profile Serum Lipid Profile was measured by Spectrophotometer using a kit provided by Linear Chemicals S.L Spain. (http://www.linear.es), or colorimeter capable of measuring absorbance at 500 ± 10 nm etermination of serum lipid profile Serum Lipid Profile was measured by Spectrophotometer using a kit provided by Linear Chemicals S.L Spain. (http://www.linear.es), or colorimeter capable of measuring absorbance at 500 ± 10 nm

Keywords: Primary Infertility; secondary infertility; BMI ;Hormonal problems ;triglycerides ; LDL; total cholesterol and HDL.

INTRODUCTION

The problem of infertility in the world's public health [1,2] . The failure to conceive naturally after a year of regular, unprotected sexual activity or copulation is referred to as infertility. Most frequently, subfertility is noted, where 1 in 7 couples require specialist advice to become pregnant. Based on the presence or absence of a previous pregnancy, infertility is divided into primary and secondary categories[3]. Sub-fertility can also fall under either primary or secondary categories [4,5].

Infertility can result from both male and female reasons [6], Infertility can be categorised as primary when a couple never conceives and secondary when they are unable to conceive again after one or more successful pregnancies [7], 1.9% of women struggle with initial infertility, and 10.5% battle secondary infertility [8.]

There are numerous causes of infertility, ranging from variables that are specific to women and men to a combination of factors; occasionally, there is no known cause [9.] The development of sexual dysfunction is largely influenced by a number of medical conditions connected to female infertility, such as PCOS, which is regarded to be the most typical cause of female anovulation. In addition to hormone problems, uterine fibroids can cause early ovarian failure[10,11.] The World Health Organization (WHO) estimates that one in four developing country women are infertile [12].The aim of current study to investigation the association between risk factors, causes and Lipid Profile in Iraqi infertility women.

PATIENTS AND METHOD:

Sample collection:

A cross-sectional study was conducted in the biochemical department of the Kamal Al-Samaraee hospital in Baghdad, Iraq, from November 2021 to May 2022. One hundred and sixty-five individuals, including 115 infertile women and fifty (50) healthy reproductive women, served as the control group.

Total cholesterol (TC), triglycerides (TG), high-density lipoprotein (HDL), and low-density lipoprotein (LDL) lipid profiles were investigated.Data was collected using a specially prepared questionnaire.

Determination of serum lipid profile Serum Lipid Profile was measured by Spectrophotometer using a kit provided by Linear Chemicals S.L Spain. (http://www.linear.es), or colorimeter capable of measuring absorbance at 500 ± 10 nm Determination of serum lipid profile Serum Lipid Profile was measured by Spectrophotometer using a kit provided by Linear Chemicals S.L Spain. (http://www.linear.es), or colorimeter capable of measuring absorbance at 500 ± 10 nm etermination of serum lipid profile Serum Lipid Profile was measured by Spectrophotometer using a kit provided by Linear Chemicals S.L Spain. (http://www.linear.es), or colorimeter capable of measuring absorbance at 500 ± 10 nm

DATA ANALYSIS : The Chi-square test was used statistically to investigate the association between the qualitative data using SPSS statistical software for Social Sciences (version 20.0 for Windows, SPSS, Chicago, IL, USA).

RESULTS:

Table -1 showed that Infertility affected more than half of the women, with 38 (33.1%) having secondary infertility and 77 (66.9%) having primary infertility.

Table (1): Distribution of the infertility women according to the type of infertility.

Type of infertility	No.	%
Primary infertility	77	66.9
Secondary infertility	38	33.1
Total	115	100

Results in table -2 showed that women between the ages of 25 and 35 were the most infertile, followed by those under 25 (No.= 39,33.9%), and those beyond 35 (No.= 29, 25.3%).

Table (2): Distribution of infertility women according to the age groups.

Age groups (years)	No.	%
≤ 25	39	33.9
25-35	47	40.8
≥ 35	29	25.3
Total	115	100

Socio-demographic characteristics

Results in Table 3 showed that 42 (36.64%) people were Illiteracy, while 25 (21.7%) and 19 (16.6%) held secondary and primary degrees, respectively. In addition, nearly 53 (46.1%) were normal, compared to a number of obese and overweight infertile women, 32 (27.8%) and 30(26.1%), respectively. Regarding residence, 69(60%), of the infertility women lived in Urban, whilst 46(40%) lived in rural and 77(66.1%) Wife's good relationship with her husband .

Table (3): association between Socio-demographic characteristics and infertility of some Iraqi women.

Socio-demographic characteristics	Infertility	
	No.	%
Educational level		
Illiteracy	42	36.6
Primary level	25	21.7
Secondary level	29	25.2
Graduated	19	16.5
Total	115	100
BMI groups (Kg/m²)		
Normal	53	46.1
Overweight	30	26.1
Obese	32	27.8
Residence		
Urban	69	60
Rural	46	40
Wife's relaonship with her husban		
Wife's relationship with her husband		
No	77	66.9
Yes	38	33.1
Total	115	100

The data presented in Table 4 showed that after three years of marriage, primary infertility increased to 21 (18.3%) from 16 (13.9%) secondary infertility, and between two and three years, primary infertility increased to 45 (39.13%) from 12 (10.4%) secondary infertility. Additionally, primary infertility was associated with a higher BMI (27.23±6.61) than secondary infertility (22.73± 1.78).

Table (4): the relationship between the period of married and BMI with the type of infertility.

Period of Married (years)	Type of infertility			
	Primary infertility		Secondary infertility	
	No.	%	No.	%
≤1	11	9.6	10	8.7

2-3	45	39.1	12	10.4
≥3	21	18.3	16	13.9
Total	77	67	38	33
BMI groups (Kg/m²)	27.23±6.61		22.73± 1.78	

There are many reasons why people experience infertility, and in the current study, we discovered the primary reasons why Iraqi women experience infertility were Hormonal problems and PCO 18.3%, so 13% for each of Problems in the fallopian tubes & in the uterus, as well as , 10.4 % unknown ,9.6 % follicle problems , and 2.6% for each scarred ovaries and sexual disorders (Table 5).

Table (5): Distribution of infertility according to Causes of infertility.

Causes	No.	%
Hormonal problems	21	18.3
Polycystic ovaries	21	18.3
Problems in the uterus	15	13.0
Problems in the fallopian tubes	15	13.0
Unknown	14	12.2
Disorders of menstruation	12	10.4
Follicle problems	11	9.6
Scarred ovaries	3	2.6
Sexual disorders	3	2.6
Total	115	100

Results in table -6 showed infertility women had levels of triglycerides(161.5 ± 82.6) and LDL (112.4 ± 33.4) that were higher than control (healthy), but less than control for total cholesterol (85.13 33.1) and HDL (42.34 ± 8.8).

Table (6): levels of lipid profile in infertility Iraqi women and healthy women.

Lipid profile (mg/dL)	Infertility	Control	p-value
Total Cholesterol	85.13 ± 33.1	152.89 ± 32.5	0.001
Triglyceride (TG)	161.5 ± 82.6	111.21 ± 56.4	0.001
HDL	42.34 ± 8.8	69.1 ± 27.91	0.001
LDL	112.4 ± 33.4	86.71 ± 28.7	0.001

DISCUSSION:

The prevalence of infertility has significantly increased in recent years[13], it is estimated that the global prevalence of infertility is 10%–15%[14].Women's level of education was one of the factors affecting female infertility. Colleran et al reported that postponed marriage and delay in pregnancy may increase the risk of infertility in educated women [22].

Results in current study appearance more than half of the women were Primary infertility 77 (66.9%), and 38 (33.1%) as Secondary infertility and the infertility women in the age group (25-35) years as (No.= 47,40.8%), followed by (≤ 25) years as (No.= 39,33.9%), and last age group (≥ 35) years as (No.= 29, 25.3%).

It may be because risk factors for primary infertility like employment and the length of bleeding days can't be modified that the duration of infertility is related with a higher odds ratio for primary infertility. Age and infertility are related to one another more strongly throughout time. It has been noted that the age at first marriage, particularly for women who marry later, also contributes to infertility. The study's findings were

similar to those of a study conducted in Egypt in 2006 in that age at first marriage after 25 years was found to be a significant risk factor for women's infertility. [15]

Current results showed that infertile women were less likely to be in stable relationships than fertile women, and that the condition was negatively connected with advanced age, an increase in the length of infertility, and previous unsuccessful IVF-ICSI procedures[16]. More marital problems were also observed in infertile women who were older, had less education, and had been infertile for three to six years [17].

Also this study showed education levels were Illiteracy as 42 (36.64%), while 25(21.7%), and 19 (16.6%) were holding Secondary and Primary levels respectively. Moreover, almost 53(46.1%) were normal, while a number of infertility women, 32 (27.8%), and 30(26.1%), were Obese and overweight, respectively, Regarding residence, 69(60%), of the infertility women lived in Urban, 46(40%), in the Rural and 77(66.1%) Wife's good relationship with her husband .

The data presented study showed more than 3 years of the period of Married were 21(18.3%) in primary infertility compare to 16(13.9%) in secondary infertility, so from 2-3 years were 45(39.13%) in primary infertility compared to 12(10.4%) in secondary infertility, as well as BMI in primary infertility (27.23±6.61) more than secondary infertility(22.73± 1.78).Furthermore, Cong *etal.,* [3] indicated a substantial correlation between the female infertility factor and BMI more than 30.

There are many reasons why people experience infertility, and in the current study, we discovered the primary reasons why Iraqi women experience infertility were Hormonal problems and PCO 18.3%, so 13% for each of Problems in the fallopian tubes & in the uterus, as well as , 10.4 % unknown ,9.6 % follicle problems , and 2.6% for each scarred ovaries and sexual disorders.

The participants' comments led to the conclusion that problems with the tubes are the main cause of female infertility, followed by the "unknown cause." Any problem that interferes with the fallopian tubes' normal anatomy and function and prevents the sperm from meeting the ovum and resulting in conception is the primary cause of fallopian tube-related infertility. Ectopic intrauterine tissue development is referred regarded as a "disease of high social class" since it is more common in developed countries and primarily affects women between the ages of 30 and 40.[18]

In addition, a similar study in France found that one in seven women in reproductive age will seek medical attention for an infertility issue, and the primary causes of female infertility in that study were PCO as ovulation disorders (32%), whereas tubal factors are seen as the primary cause of infertility in this study (26%) 9 While another study says that the tubal factor, which accounts for 15.53% of ovulation and came in second place behind PCOs[19] (Patel etal.,2016). Obstacles to conception in women may be caused by polycystic ovary disease (PCOD), genital TB, fallopian tube defects, tube blockage, endometriosis, obesity, usage of certain medications, smoking, and alcohol intake.[20]

Therefore, malformations, irregular uterine positions, inflammation, intrauterine symphysis, atrophy of the endometrium, and malignant neoplasm are the main issues with the uterus's body that lead to infertility.[21&22], Also Infertility of "unknown cause" is described as the inability to determine a specific reason of infertility despite a thorough examination of both partners.[21&22], Last but not least, using contraceptives like intrauterine spirals, which can inflame and destroy fallopian tubes, can occasionally contribute to infertility.[23]

the level of Triglyceride (161.5 ± 82.6) and LDL (112.4 ± 33.4) in infertility women more control(healthy), whilst Total Cholesterol(85.13 ± 33.1) and HDL (42.34 ± 8.8) were less than control.

Result of Isah *etal.,* 2022[24] demonstrated that the mean levels of total cholesterol and low density lipoprotein were statistically substantially lower (p 0.05) in patients than in controls, HDL levels were not statistically different from controls, however triglycerides were considerably higher in patients than in controls. Additionally, in the Iraqi study, the production of steroid hormones may have decreased as a result of dyslipidemia because cholesterols are the primary precursors to these hormones.[24]

CONCLUSION :

1.   Primary Infertility more than secondary. And most infertile women between the ages of 25 and 35 were, as well as about 42 (36.64%) infertility women were Illiteracy, followed secondary and primary degrees,

2.   infertility women lived in rural more than urban. Also primary infertility was associated with a higher BMI than secondary infertility.

3.   The main causes of infertility in Iraqi infertility women were Hormonal problems and PCO

4.   Infertility women had high levels of triglycerides and LDL, but less than control for total cholesterol and HDL.

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