

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400 Volume: 9. Issue: 5 Page N. 281-286 Year: 2025

Original Article

www.wjahr.com

THE CAUSES AND TREATMENT SUCCESS RATE OF COUPLES HAVING INFERTILITY IN MOSUL CITY

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Article Received date: 15 March 2024

Article Revised date: 05 April 2024

Article Accepted date: 25 April 2025



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ABSTRACT

Background: Infertility is defined as the inability to conceive after 12 months of unprotected and regular sexual intercourse. Understanding the causes of infertility is crucial for improving clinical management and reducing infertility rates. Infertility can be caused by physical, physiological, or genetic reasons. Objectives: To analyze the causes and treatment success rate of infertile couples in Mosul City. Methods: The study is a descriptive, cross sectional study, conducted in the department of Gynaecology and Obstetrics of Mosul General Hospital between 15th of May 2021 to the end of February 2025. The questionnaire consisted of four parts. Part 1 included sociodemographic information. Part 2 covered female factors of infertility. Part 3 covers Male factors of infertility. Part 4 for treatment outcomes. Results: The study includes 200 couples; the mean age of the study participants are 34.79 ± 9.12 years. Moreover, the mean age of females is 32.21 ± 11.07 years versus the mean age of males is 36.89 ± 7.89 years. 112 (56%) couples were reside inside Mosul and 88 (44%) couple reside in rural areas. Furthermore; among females, 155 (77.5%) patients were housewife and 45 (22.5%) patients were employed, while among male 77 (38.5%) patients were employed and 123 (61.5%) patients were self-employed. 298 (74.5%) patients were smoker and 102 (25.5%) patients were non-smoker. 168 (84%) of the study participants had primary cause of infertility versus 32 (16%) participants had secondary cause of infertility. 106 (53%) couples had infertility for 1-5 years, 78 (39%) couples had infertility for 5-10 years and 16 (8%) couples had infertility for more than 10 years. Male factors contribute to 70 (35%) infertility case, while female factors contribute to 62 (62%) infertility case, combined male and female factors contribute to 36 (18%) infertility case and lastly unexplained factors contribute to 32 (16%) infertility case. Varicocele was the most frequent cause of male infertility among 57 (28.5%) males versus PCOS was the most frequent cause of female infertility among 43 (21.5%) females. Additionally: 43 (21.5%) of couples showed successful result to the treatment. Lastly: statically significant difference shown between the factors affecting fertility (P value = 0.023) and infertility type (P value 0.013). Conclusion: The study found that male factors attributed mostly to infertility. Moreover; smoking can cause infertility. 21.5 % of couples with infertility can be treated especially those with females causes and secondary type of infertility.

KEYWORDS: Failure to conceive, Results, in vitro fertilization, Iraq.

1- INTRODUCTION

Infertility is defined as the inability to conceive after 12 months of unprotected and regular sexual intercourse.^[1] It is a significant worldwide health burden and clinical issue. It is estimated to affect 8–12% of reproductive-aged couples globally.^[2-3] In Arab societies, it is more prevalent and regarded as a stigmatizing disorder.^[4] Couples are concerned with the disease's emotional, social, financial, and physical expense.^[5] Additionally, it

may impact family relationships, job performance, and the stability of marriages.^[5-6]

Understanding the causes of infertility is crucial for improving clinical management and reducing infertility rates.^[7] Infertility can be caused by physical, physiological, or genetic reasons. About one-third of infertility cases in couples are attributed to the woman, one-third to the man, one-third to their interactions, and 20% are unaccounted for.^[8] The most common overall

reason of female infertility is failure to ovulate, which affects 25% of infertility problem.^[9] Polycystic Ovaries Syndrome (PCOS) is a major medical condition associated with infertility. It is usually hereditary and accounts for up to 90% of ovulation instances. Women who have PCOS may not ovulate, have high amounts of androgens, and have several small cysts on their ovaries. Infertility, weight gain, acne, excessive hair growth, and irregular or missed periods are all signs of PCOS. PCOS is closely associated with both obesity and insulin resistance.^[10-12] Ovulation is impacted by three hormonal diseases: hyperprolactinemia, hypothyroidism, and hyperthyroidism.^[13] Moreover; Endometriosis is a severe disorder that affects 10 to 15% of women in reproductive age.^[14]

Fertility declines with increasing age. A woman in her late teens or late twenties is at the peak of her reproductive capacity. However, at the age of 27, it begins to fall, and after the age of 35, it lowers slightly faster. By the age of 45, fertility has dropped to the point where most women difficult to conceive naturally.^[15-16]

Every country has a different prevalence of infertility, but because developing countries have fewer resources for study and treatment, the prevalence of infertility in these countries are higher there than in developed countries.^[17] In Iraq, the availability of in vitro fertilization (IVF) centers and advancements in infertility therapy have led to increased referrals of parents suffering infertility.^[18]

This study aims to analyze the causes and treatment success rate of infertile couples in Mosul City.

2- PATIENT AND METHODS

The study is a descriptive, cross sectional study, conducted in the department of Gynaecology and Obstetrics of Mosul General Hospital between 15th of May 2021 to the end of February 2025. Ethical approval was obtained from the ethical committee at Nineveh Directorate of Health before starting of the study. The study included 200 couples in Mosul City seeking medical advice and treatment for infertility. Participants

in the study ranged in age from 16-45 years for females and no age restrictions were stated for men. All the couples are followed for two years to show the success rate of treatment.

The questionnaire consisted of four parts. Part 1 included socio-demographic information such as age, residence, and occupation, history of smoking, alcohol consumption. Part 2 covered female factors of infertility, including hormonal profiles (FSH, LH, Prolactin), endometriosis, fallopian tube blockage, ovulation, fibroid, trichomonas vaginalis, recurrent miscarriage, family history of infertility, and occupational exposure to radiation, chemicals, and heat. Part 3 covers Male factors of infertility include sperm parameters such as count, motility, and morphology, as well as hormonal profile measurements of FSH, LH, Prolactin, and testosterone using radioimmunoassay. Other factors include scrotal trauma, and chemical exposure to harmful substances. Part 4 for treatment outcomes.

Statistically analysis done by using the SPSS (scientific package for social sciences) version 30.0 software. Descriptive statistics, such as frequencies and percentages, were used to present categorical variables in tables and figures. The chi-squared (χ 2) test of independence was used to examine the statistical association. P-values less than 0.05 were regarded as statistically significant.

3- RESULTS

The study includes 200 couples, the mean age of the study participants are 34.79 ± 9.12 years. Moreover; the mean age of females is 32.21 ± 11.07 years versus the mean age of males is 36.89 ± 7.89 years. 112 (56%) couples were reside inside Mosul and 88 (44%) couple reside in rural areas. Furthermore; among females, 155 (77.5%) patients were housewife and 45 (22.5%) patients were employed, while among male 77 (38.5%) patients were self-employed. Lastly; 298 (74.5%) patients were smoker and 102 (25.5%) patients were non-smoker. As shown in table 3.1.

 Table 3.1: Demographic information of the study participants.

Variable	Number = 200 Couple	Percent (%)
Female age:		
- 15-30	82	41 %
- More than 30	118	59 %
Male age:		
- 15-30	71	35.5 %
- More than 30	129	64.5 %
Residence:		
- Urban	112	56 %
- Rural	88	44 %
Occupation (Female):		
- House wife	155	77.5 %
- Employed	45	22.5 %
Occupation (Male):		

- Employed - Self employed	77 123	38.5 % 61.5 %
Smoking:		
- Yes	298	74.5 %
- No	102	25.5 %

Figure 3.1 shows distribution of the study participants according to the cause of infertility. 168 (84%) of the

study participants had primary cause of infertility versus 32 (16%) participants had secondary cause of infertility.

Figure 3.1: Distribution of the study participants according to the cause of infertility



Figure 3.2 illustrates distribution of the study participants according to the duration of the infertility. 106 (53%) couples had infertility for 1-5 years, 78 (39%) couples

had infertility for 5-10 years and 16 (8%) couples had infertility for more than 10 years.

Figure 3.2: Distribution of the study participants according to the duration of infertility 120 100 80 106 (53%) 60 78 (39%) 40 20 16 (8%) 0 1-5 Years 6-10 Years More than 10 Years Number

Figure 3.3 shows distribution of the study participants according to the cause of infertility. Male factors contribute to 70 (35%) infertility case, while female factors contribute to 62 (62%) infertility case, combined

male and female factors contribute to 36 (18%) infertility case and lastly unexplained factors contribute to 32 (16%) infertility case.



Figure 3.3: Distribution of the study participants according to the cause of infertility

Table 3.2 illustrates male related factors of infertility. Varicocele was reported among 57 (28.5%) males followed by presence of poor sperm motility in 44 (22%), the presence of low sperm count in 43 (21.5%), the presence of abnormal male hormones in 10 (5%), the presence of scrotal trauma in 7 (3.5%) and the presence of chemical exposure in 3 (1.5%) males.

Table 3.2: Male factors of infertility.

Cause	Number = 200 Male	Percent (%)
The presence of low sperm count	43	21.5 %
The presence of poor sperm motility	44	22 %
The presence of scrotal trauma	7	3.5 %
The presence of abnormal male hormones	10	5 %
The presence of chemical exposure	3	1.5 %
The presence of Varicocele	57	28.5 %

Table 3.3 shows female factors of infertility, 43 (21.5%) of the females had PCOS followed abnormal ovulation in 26 (13%), the presence of poor quality of egg in 25

(12.5%), the presence of fibroid in 24 (12%), the presence of endometriosis in 19 (9.5%) and only 6 (3%) of the females had fallopian tube defect.

Table 3.3: Female factors of infertility.

Cause	Number = 200 Female	Percent (%)
Presence of fibroid	24	12 %
Presence of the fallopian tube blockage	6	3 %
Presence of endometriosis	19	9.5%
Presence of abnormal ovulation	26	13 %
Presence of poor quality of egg	25	12.5 %
Presence of polycystic ovarian syndrome	43	21.5 %
Presence of previous history of miscarriage	11	5.5 %
Presence of positive family history of infertility	23	11.5 %

Among the studied couples, 43 (21.5%) of them showed successful result to the treatment. Table 3.4 illustrates that statically significant difference shown between the factors affecting fertility (P value = 0.023) and infertility type (P value 0.013).

Table 3.4: Success rate according to infertility causes and types.

Variable	Total, nu	mber (%)	Success, number (%)	P-Value
Infertility c	auses:			
- Male	70 (3	35%)	11 (15.71%)	
- Female	62 (3	31%)	25 (40.3%)	0.023
- Combin	ned 36 (18%)	3 (8.3%)	

- Unexplained	32 (16%)	4 (12.5%)	
Infertility type:			
- Primary	168 (84%)	31 (18.5%)	0.012
- Secondary	32 (16%)	12 (37.5%)	0.015

4- DISCUSSION

Infertility is a common problem. Numerous families are heavily burdened by it, and it has significant effects on public and individual health.^[19]

In the present study, the mean age of presenting couple with infertility found to be around mid-thirties which comparable to Rafal Mustafa Murshid et al study findings.^[20] Moreover; the majority of the study participants were from urban and the females were housewives while the males were self-employed. Additionally; the majority of patients were smokers. Which is goes with Sarah Talib Kadhim et al^[21] and Abdul Razzaq Oleiwi Jasim et al^[22] study results.

Regarding the cause of infertility. The study found that primary causes of infertility is predominant to secondary causes of infertility and more than half of the patients had infertility for less than five years. Fadhil Hussam et al had comparable results.^[23] From the other hand; about one third of the study couples were suffered from either male or female factors of infertility, while idiopathic causes account for about 16 %. Which is parallel to Tuga Mohammed Abdul-Saheb et al study results.^[24] Additionally, the study found varicocele was the most common cause for male factor of infertility while poor sperm motility low sperm count, abnormal male hormones, history of scrotal trauma and chemical exposure in less frequent percentages versus among the female factors of infertility, PCOS was the most common cause of infertility, followed abnormal ovulation, the presence of abnormal ovulation, the presence of poor quality of egg, the presence of fibroid, the presence of endometriosis and lastly fallopian tube defect. Comparable results obtained from Abdul Razzaq Oleiwi Jasim et al^[22] Razaw Omar Ibrahim et al^[23] and Ehab Jasim Mohammad et al studies' results.^[25]

Concerning the success rate. 21.5 % of the study couples were respond to different modalities of treatment options including in vitro fertilization. Which less than what is estimated by Israa Haitham Murtadha et al (33.7%).^[26] However; different treatment options were used between the two studies. Moreover; statistically significant difference shown regarding the causes and types of infertility with more response among females causes and secondary type, which consistent with Abdul Razzaq Oleiwi Jasim et al^[22] study results.

The study carries limitations, such as its retrospective nature and dependence on hospital-based data. Some sociodemographic characteristics, such past alcohol intake, were not included in the assessment. Another issue is a lack of stratification and specificity on IVF cycles.

5- CONCLUSION AND RECOMMENDATION

The study found that male factors attributed mostly to infertility. Moreover; smoking can cause infertility. 21.5 % of couples with infertility can be treated especially those with females causes and secondary type of infertility.

ACKNOWLEDGEMENT

We are grateful for the help provided by the medical team at Mosul General Hospital, as well as the careful consideration received from the Nineveh Directorate of Health. Without the help of each of these individuals, this study would not have been possible.

Conflict of intertest

About this study, the authors disclose no conflicts of interest.

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