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Prevalence and risk factors of infertility in women from Al-Mahaweel district, Babylon \ Iraq

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Abstract

Background: Infertility is defined as a failure to conceive after one year of a regular insecure relation between couples, it has a serious health dispute that has socioeconomic and health effect on both the individual and society. A little data about infertility is available in our country.

Aim: This study aims to identify the prevalence and demographic characters of infertile couples in whom the women were within reproductive age; attending Al-Mahaweel primary health care center in Babylon city.

Results: This is a cross section study conducted on couples whom the female partners were within the reproductive age attending Al-Mahaweel primary health care center in Babylon governorate. Most women aged equal or less than 35 years (88%) and about half of them with in normal body mass index (46%). Sixty percent of their husbands with free business and 64%live in urban area. Mean age of menarche was 11.5±0.64 (mean± SD), 52% have primary infertility. There were significant difference between patients with primary and secondary infertility regarding duration of bleeding days, duration of infertility, ($p<0.05$). Binary logistic regression shows that husbands with government employment was associated with increased odds ratio for the primary infertility (OR = 5.429, [1.285-12.941]. Increased duration of bleeding day and duration of infertility associated with increased odds ratio for the primary infertility (OR 4.155, [1.602-10.777]; OR = 1.816, [1.246-2.648] respectively.

Conclusion: Among couples in whom the women of reproductive age who live in Al mahaweel district, the prevalence of infertility was 3.3%, and almost half of the couples experiencing primary infertility. Government employment, increased duration of bleeding days and duration of infertility were associated with increased odds ratio for the primary infertility.

Keywords: Infertility; Reproductive age group women; Demographic character; Urban population.

1. Introduction

Infertility is a problematic health issue over the wolrd, affecting approximately 8%–10% of couples worldwide (1). According to a report by the World Health Organization (WHO), one in every four couples in developing countries is affected by infertility (2). Now a days most causes of infertility are preventable, so one must get great attention for this problem. The causes of infertility are wide extended, including socioeconomic factors, lifestyle, reproductive history, and childbearing status (3). All factors above can contribute to the form infertility through different paths (4).

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Iraq is a country with a wide miscellany; there is miscellany in traditions, quality of living, accessibility to health-care systems, and also climatic environments. Due to these factors, infertility rate varies widely. In addition, the definition used to define infertility varies between various studies, making it difficult to compare prevalence among them. Infertility in Iraq is increased, especially in the last years related to many factors, such as war, lifestyle, stress, smoking, occupation, eating performance, and hereditary (5,6). Although there was much data on infertility in other countries, little exist on infertility in Iraq.

We performed a population-based survey in Al Mahaweel district in a sample of married couples of childbearing ages. This information can be used to establish appropriate plans for prevention treatment, and management of infertility.

2. Subject and method

From April to July 2019, we conducted a population-based cross-sectional study in Al-Mahaweel primary health center in Al-Mahweel district\Babylon\ Iraq. The target population consisted of couples who had been married for more than 1 year and of which the female spouse was 15-49 years old. This survey was reviewed and approved by the Ethics Committee of college of medicine \University of Babylon. From 1500 couples attended during this period, 50 couples satisfied our selection criteria; which include female partner age 15-49 years, seeking for pregnancy, who never used birth control, and give a written consent to participate in this study. The information regarding the problem and demographic characteristics was obtained by face-to-face interview with the help of predesigned and pretested questionnaire; measurement of body weight and height to calculate Body Mass Index.

The questionnaire entailed details regarding general demographic and socioeconomic status, physical measurements, lifestyle habits ,birth date, educational level, occupation, female reproductive health (e.g. age at menarche, last menstrual period, menstrual regularity, menstrual cycle duration and duration of bleeding days, medical history and operation history), marriage and bearing status (e.g. length of marriage and living together, pregnancy history including information concerning live births, miscarriage, induced abortions and stillbirths, and type of delivery whether normal or by caesarian section.

For calculation of BMI, height and weight were measured using the same scale for all participants. BMI was determined by the ratio of weight in kg divided by the height squared in metric units

2.1 Definitions

The following definitions were used in this study:

- Infertility was defined according to the WHO manual as failing to achieve pregnancy after at least 12 months of unprotected regular sexual intercourse (7).
- Primary infertility was defined as infertile couples without any previous pregnancy, whereas
- Secondary infertility refers to couples in this situation after a previous pregnancy achieved without treatment (8).
- Women of reproductive age: by WHO refer to all women age 15–49 years (9).
- Regular menstrual cycle: Cyclic menstruation persists throughout the reproductive period of life with an average rhythm of 28 plus minus 7 days, inclusive of 4–6 days of bleeding (10).

2.2. Statistical analysis

Statistical analysis was done by using the SPSS, version 23.0 software. Continuous variables were described by mean and standard deviation (SD), and categorical variables were checked out for percentages. Chi-Test was used to compare between categorical variables while Student t-test was used to compare between continuous variables. The Binary logistic regression models were done for patients with primary infertility versus with secondary one. A two-tailed P value less than 0.05 was considered statistically significant (11).

3. Results

In this study most women aged less than 35 years (88%) with mean age of 28.5±5.80 years (mean ± SD), mean BMI (29.40 ±16.6) kg\m^2. Sixty percent of couples with primary or secondary school level of education, and none have attained college level. Sixty percent of husband with free business and 64% lives in urban area. Mean age of menarche was 11.5±0.64(mean± SD), 52% of couples have primary infertility (Table 1).

Table 1 Sociodemographic characteristic of woman participants:

Characteristics		**Patients N= 50**
Age groups (years)	≤35	44 (88%)
	>35	6 (12%)
Age (years) (Mean ±SD)		28.5±5.80
BMI groups (Kg/m^2)	Normal	23
	Over weight	14
	Obese	13
BMI (Kg/m2) (Mean ±SD)		29.40 ±16.6
Education	Illiterate	20(40%)
	Primary	20(40%)
	Secondary	10(20%)
Occupation of husband	Government employment	17(34%)
	Free business	33(66%)
Living	Urban	32(64.0%)
	Rural	18(36.0%)

Table 2 Shows the Socio demographic characteristic of the studied group. There was significant difference between patients with primary and secondary infertility regarding occupation ($p<0.05$).

Table 2 Socio demographic characteristic of women according to type of infertility

Characteristics		**Primary**	**Secondary**	**P value**
Age groups (years)	≤35	22	22	0.31
	>35	4	2	
	Total	26	24	
BMI (Kg/m2) (Mean ±SD)		33.80±11.39	28.59±17.41	0.83
BMI groups (Kg/m2)	Normal	14	9	0.28
	Over weight	8	6	
	Obese	4	9	
BMI (Kg/m2) (Mean ±SD)		33.80±11.39	28.59±17.41	0.422
Education	Illiterate	12	8	0.38
	Primary	8	12	
	Secondary	6	4	
Occupation of husband	Government Employment	12	3	0.027*
	Free business	14	19	
Living	Urban	18	14	0.55
	Rural	8	10	

*P value <0.05 was significant

Table 3 shows the risk factors of infertility among women studied. There were significant differences between patients with primary and secondary infertility regarding duration of bleeding days, duration of infertility, ($p<0.05$).

Table 3 Risk factors of infertility among women studied according to type of infertility

Characteristics		Primary infertility(n=26)	Secondary infertility(n=24)	P value
Age of menarche (years) (Mean ±SD)		11.26±5.00	11.53±5.14	0.17
Regularity	Regular	12	17	0.09
	Irregular	14	7	
Duration of bleeding(days)		5.92±1.02	4.83±0.87	0.01*
Parity	0.00	26	0	0.01*
	1-3	0	20	
	>3	0	4	
Abortion	0.00	26	2	0.01*
	1.00	0	14	
	2.00	0	8	
Live birth	0.00	26	10	0.01*
	1.00	0	8	
	2.00	0	6	
Duration of infertility (years)		6.85±2.03	3.90±2.55	0.01*
Mode of delivery	No	24	10	0.01*
	NVD	0	6	
	CS	0	5	

*P value <0.05 was significant

Table 4 Binary logistic regression analysis for primary infertility as the dependent variable

Characteristics		P value	Odds ratio	Lower Bound	Upper Bound
Age		.807	.988	.898	1.087
BMI		.062	.958	0.916	1.002
Education	Illiterate	1.000	1.000	0.212	4.709
	Primary	0.305	0.444	0.094	2.093
	secondary	.	.	.	.
Occupation	Government Employment	0.021*	5.429	1.285	12.941
	Free business	.	.	.	.
Living	Urban	0.424	1.607	0.502	5.141
	Rural	.	.	.	.
Age of menarche (years)		0.178	1.889	0.749	4.762
Regularity	Regular	0.081	0.653	.110	1.137
	Irregular	.	.	.	.
Duration of bleeding(d)		0.003*	4.155	1.602	10.777
Duration of infertility (years)		0.002*	1.816	1.246	2.648

The reference category is: secondary infertility; *P value <0.05 was significant

Binary logistic regression was done for patients with primary infertility versus with secondary one as shown in table 4. In this analysis, husband occupation was significantly associated with the type of infertility. Employer was associated with increased odds ratio for the primary infertility (OR = 5.429, [1.285-12.941].

Also, duration of bleeding days and duration of infertility were significantly associated with the type of infertility. Increased duration of bleeding days and duration of infertility associated with increased odds ratio for the primary infertility (OR 4.155, [1.602-10.777]; OR = 1.816, [1.246-2.648] respectively.

4. Discussion

The prevalence of infertility has increased significantly in recent years (12), the global prevalence of infertility is reported to be 10%-15% (13). In the present study, of 1500 women of reproductive age group who attended Al-Mahaweel primary health center, 50 women suffer from infertility; hence the prevalence of infertility is 3.3%. This calculated prevalence rate in our study is lower than the reported tendencies of infertility from developing countries. Two studies in India reported infertility rate of 12.6% and 14.2% respectively (14,15). Another study conducted in Ouagadougou (Burkina Faso); the medically-diagnosed infertility prevalence was 2.9% (16). Thus, the prevalence of infertility varies between countries and in between the different parts of the same country; in addition, the large variation in inclusion criteria between different studies making comparison difficult. Fertility rate of Iraq chop down gradually from 7.31 children per woman in 1971 to 3.54 children per woman in 2020 (17).

Table 2 shows comparison between women with primary and secondary infertility, there were no significant differences between the two groups except for husband employment, where governorate employee is significantly more than free business husbands in couples with primary infertility, this may be due to their military indulgent, where the men of this region prefer to be employed in military troop due to higher celery, without the need for well qualified educational background. In addition, those males will be outside their home because of the nature of their job making conception more difficult. Primary infertility was more than secondary infertility although it didn't reach significant level a result reached by Al-Mahmood and Al ajeely in Tikrit \Iraq (18).

Binary logistic regression was done for patients with primary infertility versus with secondary one as shown in table 4. In this analysis, occupation was significantly associated with the type of infertility. Government Employer was associated with increased odds ratio for the primary infertility; since most of our male subjects are indulged in military troops, so they may miss the "fertile window" during which women can conceive (19), same finding was concluded by by Moridi and his team (20).

Our results demonstrate that increased duration of bleeding days associated with increased odds ratio for the primary infertility (Table 4), this may be a consequence to iron and mineral deficiency associated with bleeding; a finding reached by Gibson and colloquies as well as by Margarita et al., (21, 22). This may be explained by the fact that iron loss, depresses ovarian functions, especially follicular development which results in infertility, this was shown in experimental mice study by Tonai and coworkers (23). Zhang et al., in China who did a large population prospective cohort study which concluded that both shorter (<4 days) and longer (>5 days) bleeding duration were associated with a lower fertility rate and longer time to pregnancy in rural Chinese women (24) these associations were unrelated to maternal age, ethnicity, education level, occupation, tobacco use, alcohol use and body mass index. Thus, the menstrual cycle pattern is important to be considered in the clinical decision-making process. Table 4 demonstrate that duration of infertility associated with increased odds ratio for the primary infertility, this may be due to that risk factors for primary infertility like employment can't be changed, such as employment as well as duration of bleeding days.

This study guide us to the fact that studying infertility problems in Iraq is essential to health professionals and government in terms of planning healthcare services for infertility.

5. Conclusion

Among couples in whom the women of reproductive age and live in Al mahaweel district, the prevalence of infertility was 3.3%, and almost half of the couples experiencing primary infertility. Government employment, increased duration of bleeding days and duration of infertility were associated with increased odds ratio for the primary infertility. Further large, multicentric and longer duration studies are needed to confirm or regret our preliminary study.

Compliance with ethical standards

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Disclosure of conflict of interest

We have no competing interest.

Statement of ethical approval

The study was approved by the ethical committee of College of Medicine \University of Babylon.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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Authors' contributions

Daniah Al-Sallami: collected the data. Hanan Al –Taee wrote the manuscript. Ban Edan did the statistical analysis.

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