Body Mass Index Finding among a Sample of Women with Infertility in Baghdad City

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مؤشر كتلة الجسم لدى عينة من النساء المصابات بالعقم في مدينة بغداد

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الخلاصة:

الهدف: تهدف الدراسة إلتحديد الارتباط بين مؤشر كتلة الجسم والعقم لدى النساء.

المنهجية: دراسة مقطعية اجريت في بغداد في مستشفى بغداد التعليمي والمركز الصحي في باب المعظم لعينة غير عشوائية (غرضية) وحجم العينة كان ٦٠٠. للفترة من الاول من اذار ٢٠١٣ ولغاية الاول من تشرين الاول ٢٠١٣حيث جمعت المعلومات والبيانات باستخدام استبانة معدة مسبقا للحصول على المعلومات الاجتماعية والديموغرافية،والوزن والطول لكل امراة .

النتائج: اظهرت نتائج الدراسة ان حوالي (٢٨.٨%) من النساء في الفئة العمرية (٣٤-٣٠)سنة. السمنة في فترة العقم (اقل من ٥ سنوات) كانت (٥٩%). تبين وجود ترابط معنوي واضح بين مؤشر كتلة الجسم و فترة العقم والفئة العمرية ونوع العقم .

الاستنتاج: أغلبية عينة الدراسة كن يعانين من السمنة، ووضوح ارتباط معنوي عالي بين مؤشر كتلة الجسم وفترة عدم الخصوبة، والعمر ، ومتوسط الوزن ومتوسط الطول

التوصيات: التثقيف الصحي حول الاكل الصحي والنظام الغذائي وممارسة الرياضة البدنية لمنع السمنة.

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Abstract:

Objective (s): To find the Body Mass Index of women with infertility and To find any association between infertility period and increase BMI .

Methods:- A cross-sectional study conducted in Baghdad in outpatient department in Teaching Hospital,& Bab-Al Moadham primary health care centerSampling was (non probability convenient)&sample size was 600. The study started from 1st of March 2013 to 1st of October 2013. Data was collected by questionnaire to obtain socio-demographic information &weight and height measurement.

Results: The result shows that about (28.8%) of women in age group (30-34) years. Obesity in the infertility period (less than 5) years was (59%). Infertility period and age group, type of infertility, were significant associated with BMI .

Conclusions: Most of the study sample was obese and a highly significant association is noticed between body mass index and infertility period, age, type of infertility, mean weight and mean height.

Recommendation: Health education about the healthy eating approach and relation to diet and physical exercise to prevent obesity.

Keywords: body mass index, infertility, women

INTRODUCTION:

Obesity is becoming a fast growing health problem across the world. In addition to diabetes and cardiovascular disease, it also leads to alterations in reproductive functions. Excess body fat leads to menstrual irregularities especially chronic oligo-anovulation and infertility. Obesity leads to hyperinsulinemia and consequent ovarian hyperandrogenism. Infertility is the failure of a couple to conceive even after one year of unprotected intercourse [1-3].Obesity is also known to affect fertility. Several prospective studies have shown that obesity leads to anovulatory infertility. It is associated with higher miscarriage rates and higher prevalence of gestational diabetes and pregnancy induced hypertension [4].

Infertility resulting from ovulatory dysfunction account for about 21% or a fifth of all of infertility and 30% of female infertile patients. The ovulatory factor refers to the ability of women to normally undergo the process of ovulation. The absolute proof of ovulation is

pregnancy. The world health organization (WHO) scientific group on, agents stimulating ovarian function in the human has proposed a working classification of ovarian dysfunction. Despite many advances in the understanding of ovulatory pathophysiology since then, this classification has stood the test of time, it remains widely used and provides logical approach to a diagnosis- oriented management [5].If body mass index (BMI) is too high or too low, it can have a great effect on fertility. Obesity is rapidly increasing worldwide [6,7].

The BMI may vary slightly from individual to individual. Having a BMI that is too low affects stimulation of the gonads of both males and females. A higher BMI in women can cause insulin levels to increase. This can cause testosterone not to be converted into estrogen. The bottom line here is that the ovaries will not release eggs without sufficient estrogen production[8].Approximately half of all women with polycystic ovary syndrome (PCOS) are overwight or obese. There is an increasing evidence that intra-abdominal or visceral fat is higher causative or a very early effect of PCOS [8].Studies abroad suggest that the intricate and complex hormonal balance governing the hypothalamic- pituitary- gonadal axis is affected by an individual's BMI affecting fertility, as well as early puberta, and premenarcheal hormonal implying long term consequences[9- 11].

OBJECTIVES OF THE STUDY

The present study was carried out to find the BMI of women with infertility, and to find any association between infertility period and increase BMI .

METHODS

A cross-sectional study was conducted in outpatient department in Baghdad teaching hospital & Bab-Al Moadham primary health care center was chosen for this study and the sample was selected by (non probability convenient sampling) and sample size was 600. The study started from March 1st 2013 to October 1st of 2013. The data was collected by direct interview using special questionnaire to obtained socio-demographic information (age, education, duration of infertility). The tools used for measuring BMI were height and weight scale, BMI was measured by the following equation:

BMI=[Weight (kg)/Height (m^2)] [12,13].

BMI categories are defined by The Centers for Disease Control and Prevention and The World Health Organization as:(Under weight < 18.5 kg/m^2, Normal 18.5–24.9 kg/m^2, Overweight 25–29.9 kg/m^2, Obese 30–39.9 kg/m2 or Class I obesity 30–34.9 kg/m^2 and Class II obesity 35–39.9 kg/m^2, Very obese ≥40 kg/m^2 [12,13].

Infertility can be broken in to two categories:

Primary infertility:

Is the inability to conceive in a couple who have no previous pregnancy, and comprise 40% of couples.

Secondary infertility:

Is the inability to conceive in a couple have had at least one previous pregnancy, which may have ended in a live, stillbirth, miscarriage, pregnancy or induced abortion[14].

Data was analyzed by SPSS package version 18, X^2 test was used for significance of p value of <0.05 was considered significant.

RESULTS:

Table (1): Distribution of the study sample according to age, BMI and infertility periods

Age in years	No.=600	%
<20	55	9.2
20-24	71	11.8
25-29	120	20
30-34	173	28.8
35-39	140	23.4
≥40	41	6.8
Total	600	100
BMI Classes		
Under weight	24	4
Normal	42	7
Overweight	144	24
Obesity	390	65
infertility period(years)		
< 5	354	59%
5-9	138	23%
10-14	60	10%
> 15	48	8%

Table (1) shows that thehighest percentage was in ages (30-34) years (28.8%), as for BMI (65%) were obesity and about (24%) were overweight and the highest was in period less than 5 years.

Table (2): Distribution of the study sample according to type of infertility

Type of infertility	No.	%
Primary infertility	354	59
Secondary infertility	246	41
Total	**600**	**100**

Table (2) showed that of women (59%) have Primary infertility, while of women (41%) have Secondary type of infertility

Table (3): Distribution of study sample according toInfertility period by BMI classification

Infertility period	Classification of BMI				Total N=600 & %	p.value
	underweight	normal	Overweight	obesity		
< 5	15 4.2%	15 4.2%	102 28.8%	222 62.8%	354 100%	X^2=28.874 p≤ . 0.04 S
5-9	3 2.17%	18 13.04%	27 19.56%	90 65.21%	138 100%	
10-14	3 5%	6 10%	9 15%	42 70%	60 100%	
15+	3 6.25%	3 6.25%	6 12.5%	36 75%	48 100%	

Table (3) shows thatwomen with infertility period (<5 years) had higher rate of obesity (62.8%), Results are highly significant as p-value was <0.05.

Table (4): Distribution of study sample according to age group by BMI classification

Age in years	Classification of BMI				Total N=600& %	p.value
	underweight	normal	Overweight	obesity		
<20	5 9.1%	5 9.1%	13 23.6%	32 58.2%	55 100%	X^2=22.821 p≤ . 0.01 HS
20-24	5 7%	9 12.6%	12 17.1%	45 63.3%	71 100%	
25-29	4 3.3%	7 5.8%	33 27.5%	76 63.4%	120 100%	
30-34	3 1.7%	9 5.3%	49 28.3%	112 64.7%	173 100%	
35-39	5 3.5%	7 5%	29 20.7%	99 70.8%	140 100%	
≥40	2 4.9%	5 12.2%	8 19.5%	26 63.4%	41 100%	
Total	24 4%	42 7%	144 24%	390 65%	600 100%	

Table (4) shows that women with age (35-39 years) had higher rate of obesity (70.8%), Results are highly significant as p-value was <0.05.

Table (5): Distribution of study sample according to type of Infertility by BMI classification

Type of Infertility	Classification of BMI				Total N=600& %	p. value
	underweight	normal	Overweight	obesity		
Primary infertility	15 4.2%	17 4.8%	91 25.7%	231 65.3%	354 100%	X^2=355.4 p≤ . 0.007 S
Secondary infertility	9 3.7%	25 10.2%	53 21.5%	159 64.6%	246 100%	
Total	24 4%	42 7%	144 24%	390 65%	600 100%	

Table (5) shows thatwomen with Primary infertility had higher rate of obesity (65.3%), Results are highly significant as p-value was <0.05.

Table6: Distribution of the sample according to mean weight ,height and BMI of infertile female.

Infertility period in years	Total No= (600)		Mean Weight ± S.D	Mean height ± S.D	BMI ± S.D
	No	%			
<5	354	59	68.0 ± 7.3	153.3 ± 10.0	28.4 ± 6.7
5-9	138	23	73.5 ± 5.7	152.2 ± 8.7	31.60 ± 2.4
10-14	60	10	79.5 ± 5.9	151.9 ± 9.1	34.46 ± 3.7
≥15	48	8	80.5 ± 5.0	150.8 ± 8.8	35.40 ± 4.0

Table (6) shows that the mean weight and BMI was higher in period >15 year (80.5 ± 5.0), (35.40 ± 4.0) and the mean height was higher in period (<5 year) (153.7 ± 9.4).

DISCUSSION:

Obesity has become a major health problem across the world. In women, it is known to cause anovulation, subfecundity, increased risk of fetal anomalies and miscarriage rates [15], both men and women with increased BMI were more likely to be infertile than normal weight. In women, obesity can affect fertility in different ways by causing hormonal imbalances that

have an impact on ovulation and menstruation[16]. The highest percentage of infertility period was 59% for the < 5 years, and 23% for the 5-9 years period the finding of the present study is disagrees with finding reported by Davis 2002 [17], who found the highest rate in the infertility period of 15 years more than in period (10-14) years, this differences may be due to geographical and sampling variation.

It is obvious that most women that included in this study suffered from primary infertility the finding of the present study is disagrees with finding reported by Taylor 2003 [18], who found the highest rate of women suffered from secondary infertility this may be due to different in sample size.

A strongly significant association have been found between obesity of infertile women age and the infertility period the finding of the present study is agreement with findings reported by Taylor 2003 [18], Tietz 2006 [19], Case 2003 [20], they found that Significant association was found between obesity of the infertile women with infertility period,This could be explained by a variety of social, professional, financial, or psychological reasons, many women delay pregnancy until well into their 30s. Most women are unaware of the fact that after age 35 fertility declines and the success of assisted reproductive technologies (ART) also declines dramatically with increasing maternal age [20]. As a woman ages, the ovarian follicles diminish in number and become less sensitive to FSH. The process of ovulation becomes increasingly inefficient, less regular, and less predictable than in earlier years. A woman will begin to notice changes in her reproductive cycle at around age 38 to 42. Initially, she will notice a shortening of the cycle length. With increasing inefficiency of the reproductive cycle, the follicular phase shortens, but the luteal phase is maintained at normal length. With the passing of time, some cycles become anovulatory, so that the frequency of ovulation decreases[21].Significant association was found between age and obesity , the finding of the present study is agreement with findings reported in Sadia et al 2009 [22], Sudha . 2009 [16], identified infertile women with obesity was in age 31-40 years this may be due to the different environment , nutrition and life style lead to causing hormonal imbalances that have an impact on ovulation and menstruation [23].Significant association was found between obesity of the infertile women with type of infertility, the same result were seen in Sudha 2009 [16], reported that women with excess body weight are more likely to have fertility problems this may be because Excess weight is not only linked to increased risk of chronic disease and life threatening comorbidities such as diabetes, hypertension and dyslipidemia , but has also been shown to increase risk of reproductive problems [18].

This study shows the mean BMI was (35.40±4.0) which is similar to values reported for women among Ghanaian population in Accra Amoah 2003 [24], and a Pentecostal population in Kumasi – Ghana BY Owiredu 2008 [25], they found that the mean of overweight and obesity (using BMI) among the infertile women was 34.72 and 45.14 respectively. This could be explained by obesity may interfere with many neuro endocrine and ovarian functions, thereby reducing both ovulatory and fertility rates in otherwise healthy women[26].

CONCLUSIONS

Obesity is highly among women who are have infertility period less than five years.And there were a highly significant association is noticed between body mass index and infertility period, age, mean weight of women with infertility

RECOMMENDATIONS

Health education about healthy behavior like healthy eating approach and physical exercise to prevent obesity and keep their body weight within normal levels, getting use of Multimedia health education facilities.

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