Relation of Combined oral contraceptive pills with obesity in Karbala province

Dr. Afrah Hamad Maki (M.B.Ch.B.D.G.O)

Abstract

Background : The worldwide popular method remains the oral combined contraception in prevention of pregnancy and consider in many countries the first choice of women that visit family planning clinics. Its action in multiple level by inhibition of ovulation, thickening of cervical mucus, interrupt penetration of sperm and disturb receptivity of endometrium lead to impairment of implantation. The weight gains mostly due water retention by the effect of estrogen and progesterone content of combined oral contraception. **Patients and methods**: A cross sectional study enrolled 300 women that attendants the family planning unit in primary health care. In period from Nov 2018 to Jun 2019. Women were eligible for this study age between 20-45 years and current use of combined oral contraception for prevention of pregnancy for at least three years ago. Data were collected by interview every participant enrolled in study with guidance of questionnaire. The sample further divided into groups according to body mass index (BMI) which is calculated according to formula BMI (weight (kg)/ height (m^2)). **Result** :The result presented the mean age was 34.5 years, the mean of weight 65.8 and mean of body mass index was 24.1 kg/m^2. Also 73% of sample were normal weight, and only 15.6% reported as gain in weight during uses of oral combined contraception. 12.3% of women that currently use of contraception with normal weight reported occurrence of pregnancy while in obese group 16% .The difference between two categories was insignificant. **Conclusion** : The weight gain during taking of contraception might be due to genetic or life style habit of women and not absolutely blame to combined oral contraception. In addition, there was no considerable effect of increase body weight in efficacy of combined oral contraception.

Key word: contraceptive pills, obesity, women.

الخلاصة:

المقدمة:

ان حبوب منع الحمل الثنائية تعتبر اكثر طريقة شائعة لمنع الحمل في مراكز تنظيم الاسرة في كثير من دول العالم .فهي تمنع

حدوث الحمل بطرق مختلفة مثل عدم السماح لتكوين بيضة مؤهلة للاخصاب تطرح خارج المبيض او احداث تثخن في افرازات عنق الرحم تعيق دخول الحيامن الذكرية و غير ذلك.

طريقة الحمل: لقد شملت هذه الدراسة 300 امراة من النساء المراجعات لوحدة تنظيم الاسرة في مستوصف الاسكان في محافظة كربلاء من تشهرين الثاني 2018 و لغاية تشرين الاول 2019 و كانت اعمارهم تتراوح

بين 20-45 سنة من اللواتي يستخدمن حبوب منع الحمل الثنائية لمدة لا تقل عن ثلاث سنوات .جمعت المعلومات من المشاركات عن طريق استبيان خاص و قسمت المشاركات الى مجاميع اعتمادا على كتلة الجسم المستحصلة من الطول و الوزن .

النتائج:

اوضحت النتائج انه لا توجد علاقة ذات اهمية بين استخدام حبوب المنع الثنائية و السمنة , حيث ان المشاركات اللواتي حدث عندهن زيادة بالوزن كانت نسبتهن 15,6% فقط بينما 84,4% لم يحدث عندهم اي زيادة بالوزن . اما نسبة حدوث الحمل (اثناء استخدام المانع) في النساء ذوات الوزن الطبيعي كان 12,3% مقارنة بي 16% عند النساء اللواتي يعانين من السمنة , و هذا يعني عدم وجودة علاقة ذات اهمية بين كفاءة حبوب المانع الثنائية و السمنة .

المناقشة:

تبين من خلال هذه الدراسة بانه لا توجد علاقة ذات قيمة بين استخدام موانع الحمل و السمنة فقد تكون زيادة الوزن ناتجة من زيادة تناول الغذاء او نوع الغذاء او بسبب جيني يتعلق بالعوامل الوراثية , كذلك اثبتت الدراسة بانه لا يوجد فرق ذو قيمة في كفاءة حبوب منع الحمل الثنائية عند النساء اللاتي يعانين من السمنة .

Introduction

Contraception is a method by which prevent or avoid the pregnancy, through interfering with process of ovulation, fertilization and ovum implant. Many factors determine women choices for the methods of contraception, including client's factors or their preference such as concomitants diseases or other drugs intake. On other hand method characters for example efficacy, safety and cost [(1)]. There are multiple type of contraception methods and each kind differ from other in sit of action in the process start from ovulation pass to fertilization and to implantation. also, every method has special side effect and risk. In addition, variables present in reliability between each type[(2)]. The worldwide popular method remains the oral combined contraception in prevention of pregnancy and consider in many countries the first choice of women that visit family planning clinics [(1)]. Its action in multiple level by inhibition of ovulation, thickening of cervical mucus, interrupt penetration of sperm and disturb receptivity of endometrium lead to impairment of implantation[(3)].There are variable uses for combined oral contraception like improving of menstrual cycle in female suffering from irregularity by make the cycle regular, lighter and less painful [(4)]. Female often intake contraception to reduce withdrawal bleeding by continue on treatment for two or three months. Other uses it could be use in treatment of ovarian cyst, polycystic ovary syndrome, acne and hirsutism [(5)].Combined oral contraceptive pills act on endocrine system to prevent pregnancy. Its effect due to increase female hormonal level resembling pregnancy state to level at which inhibition of ovulation and implantation[(6)]. The popular type of combined oral contraception contains of two hormones estrogen and progesterone. On other hand these two hormones have variable adverse effect on body systems such as cardiovascular system [(7)]. The efficacy of oral contraception might

be affected by other medication intake together , for example Bosentan use for treatment of pulmonary hypertension [9]. Obesity and overweight , now reach epidemic state in the world and equally effect male and female .In USA obesity affect about 34%of women in reproductive age and about 12% in western Europe and the level still rising[10]. World Health Organization define the obesity according to the body mass index, people suffering from obesity or overweight more prone to develop cardiovascular disease, stroke, diabetes mellitus, cancer and osteoarthritis, in addition, obesity estimated to be fifth leading cause of death worldwide[11]. It has been supposed increase body weight might enhance the metabolism of oral contraceptive leading to unavailable concentration and a result less efficacy of contraception [12]. Women whose obese or overweight when become pregnant, has been reported increased risk of development many diseases such as gestational hypertension, diabetes, pre-eclampsia and caesarean section [13]. Additionally, fetal complication increases clearly in obese women, for instance high rate of stillbirth growth restriction, neural tube defects and increase of prevalence of childhood obesity in children of obese mother[14]. Oral combined contraception can increase estrogen level more than six times of normal concentration in blood, this elevation could be associated with fluid retention, the body will retain much water than normal state result in slightly increase weight, it occurs naturally during menstrual cycle. The weight gains mostly due water retention by the effect of estrogen and progesterone content of combined oral contraception. This fact may be misleading by many women and fear from weight gain during course of intake contraception[15]. Women with obesity are less likely to return to pre-pregnancy weight after pregnancy , thus it is important to women to take in consideration effective method for contraception when undesired pregnancy not preferred [16]. From above it clearly obese women has special attention to family planning needs to prevented unintended pregnancy and subsequent obstetric complication. However, must be enforce family planning counseling for obese women to increase benefit form contraception use, with particular needs and methods that not have risk to women. Some time need to start contraception for recommended period to give women chance to decrease weight prior to conceiving so they can obtain healthier pregnancy[17].

Aim of study : To assess the association between combined oral contraceptive pills and obesity. And if there is a difference in failure of contraception between obese and normal weight females.

Patients and methods: A cross sectional study enrolled 300 women that attendants the family planning unit in primary health care of Iskan. In period from Nov 2018 to Jun 2019. Women were eligible for this study age between 20-45 years and current use of combined oral contraception for prevention of pregnancy for at least three years ago.

Exclusion criteria

1- Women use contraception for other purpose
2- Women had polycystic ovarian syndrome
3- Women stop drug during previous three years for any cause

Data were collected by interview every participant enrolled in study with guidance of questionnaire that contains many parts. The first one is demographic information (age, BMI, marital status, number of children, occupation, education level).The second part involved details about contraception used and obstetric history (gravidity, parity).The last part included details about contraception used and duration of it. Other source of information which are participants files that reserved in health center. Body weight and height measure at visit and from reserved file of patients.The sample further divided into groups according to body mass index (BMI) which is calculated according to formula BMI (weight (kg)/ height (m^2)).

BMI categories: -

1- < 18.5 under weight
2- 18.5-24.9 normal weight
3- 25-30 overweight
4- > 30 obese

We allocated from the study two groups first group normal weight and second group overweight and obsess women. The comparison was done between two groups to identify pregnancy that occurred in participants during consumption of contraception that is mean failure of prevention of pregnancy by combined contraception. Ethical issues, oral consent from participants were consider and brief explanation about purpose of study and benefits, furthermore any question raise by women should had clear responded. In addition to official permission from health directorate.

Results

Result presented the mean age was 34.5 years, mean of weight 65.8 and mean of body mass index was 24.1 kg/m^2. The demographic characters of sample that show in table one estimated the age group between 35-45 years had the high percentage of contraception uses other than other age groups. Also 73% of sample were normal weight, and only 15.6% reported as gain in weight during uses of oral combined contraception. In regard to education level of women, 37% were graduated from secondary school, 34% were graduated from primary school. In addition, 56% of women were worker outside her house.

Table 1: demographical characters of total sample

Variable		No.	Percentage
Age	18-24	49	16.4%
	25-34	95	31.6%
	35-45	156	52%
Weight	Obese or overweight	81	27%

	Normal weight	219	73%
Weight gain	Yes	47	15.6%
	No	253	84.4%
Education	Read and write	59	19.6%
	Primary school	63	21%
	Secondary	104	34.7%
	High university	74	24.7%
Occupation	House wife	136	45.4%
	Worker	164	54.6%

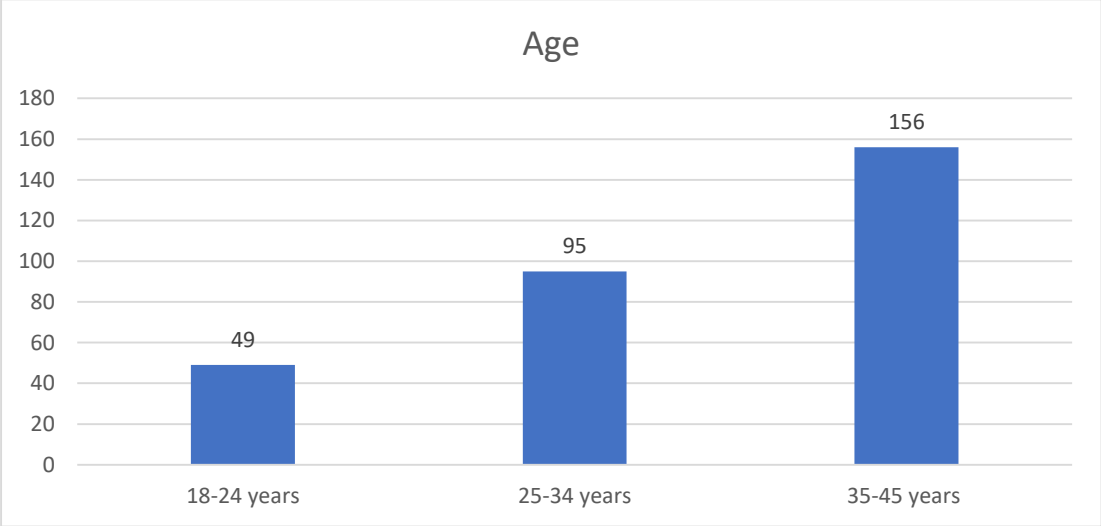

Figure 1: age distribution of total sample.

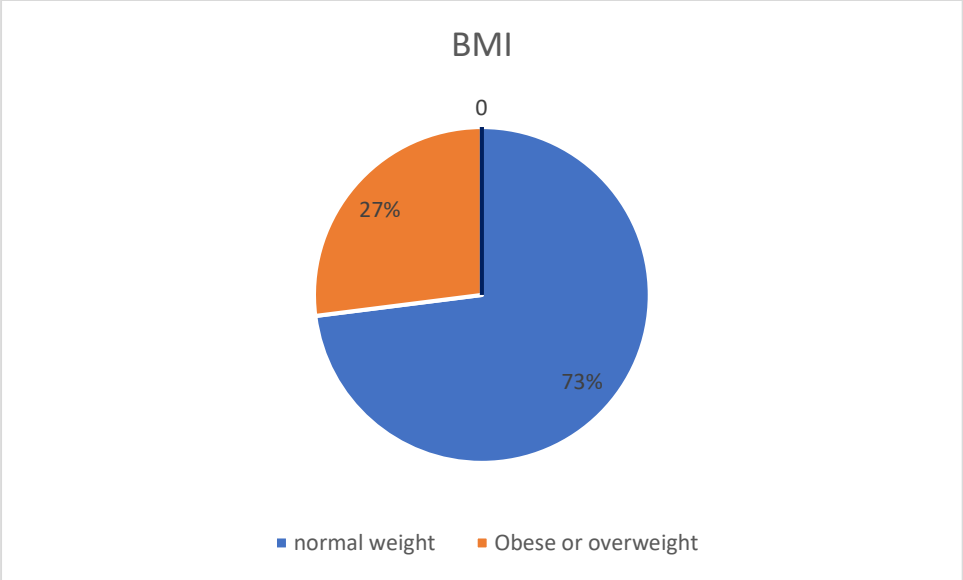

Figure 2: BMI distribution of total sample.

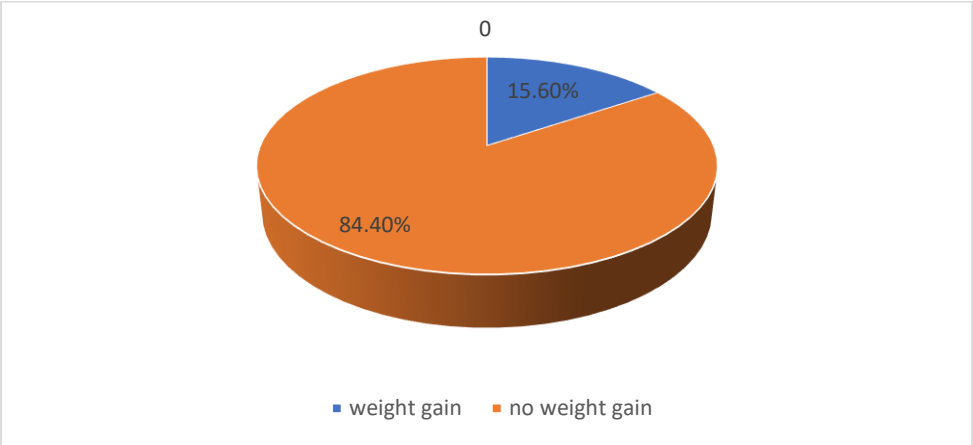

Figure 3: show the weight gain.

Table 2 showed that 12.3% of women currently used of contraception with normal weight reported occurrence of pregnancy while in obese group 16% informed about pregnancy, the difference between two categories was insignificant.

Table 2: difference in failure of contraception (pregnancy) with BMI

		Obese or overweight		**Normal weight**		
		No.	Percent	No.	Percent	p-value
Failure of oral contraception (pregnancy)	Yes	13	16%	27	12.3%	0.4
	no	68	84%	192	87.7%	
Total		81		219		

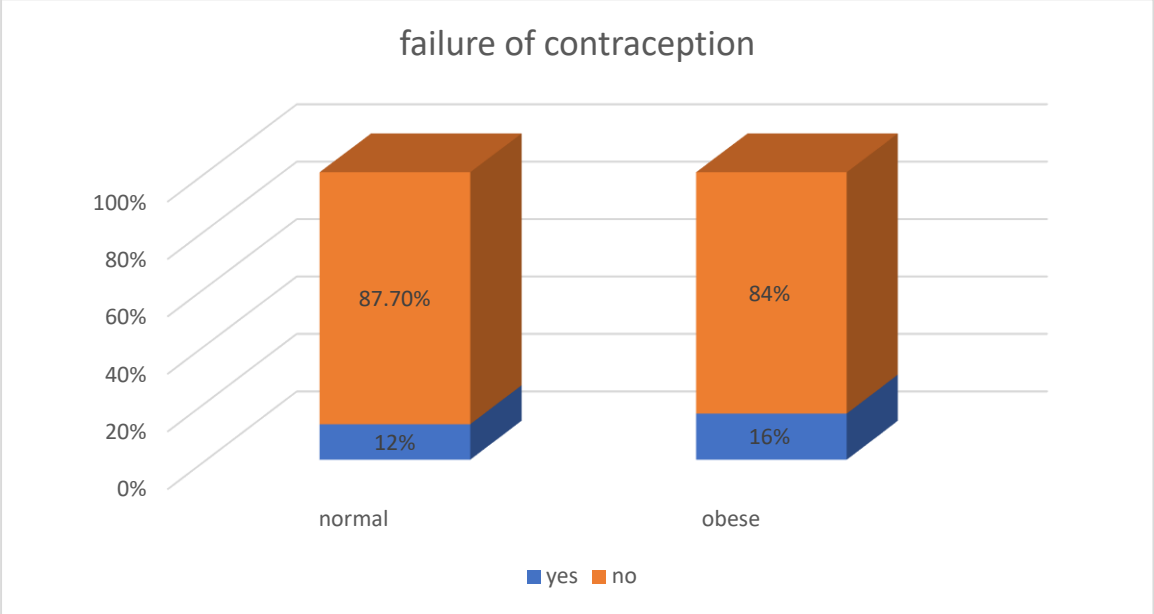

Figure 4: presented the failure in contraception between two group of BMI.

In regarded to association between age and body mass index, in obese women there were 21% in age group 18-24 years, and 35.8% in age group 25-34 years and 43.2% in age group 35-45 years. 62,9% of obese women were house wife and 37.1% were worker outside house, on other hand 38.8% of women with normal weight were housewife and 61.2% were worker, here the difference was statistically significant, as shown in table 3.

Table 3: show the association between demographic characters and BMI

Variable		Obese or overweight		Normal weight		p-value
		No.	%	No.	%	
Age	18-24 y	17	21%	32	14.7%	0.9
	25-34 y	29	35.8%	66	30.1%	
	35-45 y	35	43.2%	121	55.2%	
	Total	81		219		
Occupation	housewife	51	62.9%	85	38.8%	0.002
	worker	30	37.1%	134	61.2%	
Education	Read and write	26	32%	33	15.5%	0.3
	primary	19	23.4%	44	20.5%	
	secondary	23	28.4%	81	36.1%	
	university	13	16.2%	61	27.9	

	Total	81		219		

Discussion

Much concern in obese women to avoid the contraception drugs, due to role of hormonal effect in increase weight of client. But many studies said that increment in weight may be due to other causes rather than hormonal effect of contraception, such as sedentary life style[1]. In our study 16% of our sample reported weight gain. In addition, Lopez study 2016 stated that no association between combined oral contraception and weight gain. The study found small increase in body weight of some participants[8]. There were several mechanisms lead to weight gain due to hormonal effect of contraception in body such as increase mass of muscles and fluid retention by mineralocorticoid activity .In addition to anabolic properties of oral combined contraception could be result in increase food intake by physiological effect on satiety [6]. The weight gain had been suggested could be role of estrogen in oral combined contraception it is stimulate the renin angiotensin mechanism and fluid reserve, or might be growth in subcutaneous fat tissues, especially in specific site such as breast, hips and thighs. While progestogen content may be increase appetite due to anabolic characters[13]. These fear from weight gain after use of contraception give rise many problems for example early discontinuation, it consists with Rosenberg study that presented 1.4 relative risk for discontinuation of pills due to weight gain[19]. However, there were no significant association or causal relationship between oral combined contraception and increase in body weight of women[20]. In our sample 27% were overweight or obese, which are less than normal weight in seeking of family planning, similar result by Chuang CH (2005), which was reported obese women were less likely to practice of preventive health care as well as family planning[21]. It is uncertain about this discrepancy is associated to patients, providers or system. Regarding contraception probably due to supposition that fertility decrease in obese women. On other hand, some health provider assumption contraception more dangerous than pregnancy[4]. In contrast, study Katharine B. (2016) in reveal similar rate of contraceptive uses through variables categories of BMI[22], other analytic studies demonstrate accessibility for family planning and different methods of contraception among women differed with variables weight groups[23]. Jain study (2004)reported 44% of sample with overweight or obese in one trial and 27% in other trial[24]. Other researcher in seven trial found obese and overweight women about 30% from total participants[20]. In westhoff study stated half of women with BMI more than 25 and 20% had BMI more than 31[25]. In addition, Xu and coworkers described sample women from community and family clinics they found 28% overweight and 35% had obesity[12]. Moreover, obese women constituted 17% in Gemzell study[9] and 29% in Kunitz study[2]. Other result in our study, out of 81 women lie in group of overweight and obese there were 13(16%) mention of occurrence of pregnancy during course of oral combined contraception pills. While in normal weight group there were 27 (12.3%) out of 219 women, this difference

not statistically significant. Meanwhile study by Dinger found very small variation in failure of contraception between categories of BMI[14]. Study by Holt in USA (2005), he did prospective design and reported of increase rate of accidental pregnancy in women with obesity in compared to normal weight[26]. Also Huber and coworker (2006) stated an association between efficacy of oral contraception and women obesity[27]. On other hand many studies cannot reported association between overweight or obesity and failure of contraception[28].

Universally wide acceptable studies suppose combined oral contraception are effective in prevention of pregnancy in obese female and non-obese, although it give rise to small difference could be return to improper use and steroid effect changed in obese women[29]. The report by Merki feld (2015) surveyed contraception effectiveness in obese female, he had concluded efficacy of drug not disturb in obesity[7]. In conclusion there were no considerable effect of increase body weight in efficacy of combined oral contraception. In addition, the weight gain during taking of contraception might be due to genetic or life style habit of women and not absolutely blame to combined oral contraception.

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