

**The effect of Caesarean Section on Body Weight and Waist
Circumference among women in AL Nasiriya City**

A Dissertation

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DEDICATION

To my parents:

The reason for what I have become today. Thanks for your prodigious support and care.....

To my husband:

I am really appreciative for your sustained support.....

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First and above all, I praise to God, the almighty for providing me this opportunity and granting me the capability to proceed successfully.

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List of abbreviations

AO	Abdominal Obesity
BMI:	Body Mass Index.
CAD	Coronary Artery Disease
CHF	Congestive Heart Failure
CT	Computed Tomography
CTG	Cardio Toco Graphy
CVD	Cardio Vascular Disease
DM	Diabetes Mellitus
DVT	Deep Venous Thrombosis
HDL	High Density Lipoprotein.
Ht	Height
ID	Iraqi Dinar
IDF	International Diabetes Federation
IOM	Institute Of Medicine
IUGR	Intra Uterine Growth Restriction
LDL	Low Density Lipoprotein.
NCEP	National Cholesterol Education Program
NVD	Normal Vaginal Delivery
OSA	Obstructive Sleep Apnea.

PCOS	Poly Cystic Ovary Syndrome
PET	Pre-eclamptic toxemia
SHBG	Sex Hormone Binding Globulin.
SPSS	Statistical Package for Social sciences.
T2DM	Type 2 Diabetes Mellitus
TG	Triglyceride
USA	United states of America.
WC	Waist circumference.
WHO	World Health Organization.

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Summery

Background: The population worldwide have faced a growing epidemic of abdominal obesity, the prevalence of overweight and obesity is increasing in both developed and developing countries. Abdominal obesity is a major risk factor for many chronic diseases including diabetes, hypertension and ischemic heart diseases ,so it is considered a major public health problem.

Objectives: This study was carried out to explore the effect of caesarean section on body weight and waist circumference in comparison with normal vaginal delivery in Thi-Qar maternity hospitals.

Materials and methods: A hospital based cross sectional study was carried out in two teaching hospitals (Al Habobi teaching hospital and Bent Al Huda teaching hospital) in al Nasiriya city from the first of November/2016 to the first of November / 2017. Non-pregnant women who attended the obstetric and gynecological outpatients clinics in these two hospitals were included in this study. Based on assumed prevalence of obesity among women in Iraq in 2015 (42.6%), so the needed sample size to calculate with precision of 5%, confidence level of 95%, and added extra sample of 10%, is almost equal to 500 women. data were collected by using a special questionnaire which was designed for the purpose of the study. Abdominal obesity was considered when patients waist circumference measurement more than 88 cm.

Results: This study showed that proportion of abdominal obesity among non-pregnant women was 64.2 %. This rate was significantly affected by mode of delivery (Abdominal obesity was more among women who had history of caesarean section in comparison with women who had history of normal vaginal delivery) ($p=0.0001$) and proportion of obesity was 82.2%and the proportion of abdominal obesity was more among women who had history of

caesarean section 71.7% in comparison with women who had history of normal vaginal delivery 28.3% ($p=0.0001$) .

Conclusion: two-thirds of attendants women of outpatient clinic showed Abdominal obesity in Thi-Qar maternity hospitals . It is recommended to re-enforce pre natal health care of non-pregnant women through the antenatal care services at primary health care level and state the complication after caesarean section control weight before pregnancy.

According to the results obtained from this study and the current situation regarding the care of women in reproductive age in Iraq and specifically in Al-Nasiriya city, the most important and practical recommendation is to activate the maternal health care at primary health care center or at least in every hospital with a nutritional clinic for strict follow up of women after caesarean section by well-trained doctors and other health staff.

Key word: Abdominal obesity ,caesarean section ,waist circumference Thi-Qar province.

Chapter One

Introduction and literature review

1.1. Obesity

1.1.1 Introduction of Obesity

Is an excessive accumulation of fat in the body to that it can have a negative effect on health, it is a global epidemic and is an important risk factor for developing cardiovascular diseases (CVD), diabetes, hypertension and dyslipidemia. In developing countries, the rate of obesity has tripled, which has been attributed primarily to adopting a modern lifestyle with less physical activity and excessive consumption of energy dense foods (1).

Women who are overweight are at greater risk of developing pregnancy complications and problems associated with labour and delivery and are more at risk of postpartum complications such as infection, hemorrhage and embolism. This means, maternal mortality and morbidity are significantly elevated among obese women .Obesity among women has been linked to education, age, income as well as marital status (2) .

BMI recommended by the WHO to classify obesity, is the gold standard for identifying patients at risk of adverse health outcomes. Various epidemiological studies have shown a direct association between BMI and the risk of medical complications and mortality rate (3).

WHO and the National Institute of Health have provided guidelines for classifying obesity based on BMI. The guidelines have proposed that adults who have a $BMI \geq 30 \text{ kg/m}^2$ are obese and are generally at higher risk

for adverse health events than overweight (BMI between 25.0 and 29.9 kg/m²) or normal (BMI between 18.5 and 24.9 kg/m²) (4).

Besides BMI, another important risk factor for obesity related diseases is the body fat distribution. Expensive imaging techniques are required for the precise measurement of abdominal fat content and it is also known that WC(waist circumference) has a correlation with abdominal fat mass, therefore, WC is often used as a surrogate marker for measuring abdominal fat mass, even though it does not take into account variation in height (5).

BMI (body mass index) continues to be used today because it is easily calculated and is the best tool available from a broad-based health policy perspective(6).

Measuring a person's waist circumference is the simplest way to assess central obesity. WC has been shown to be one of the most accurate anthropometrical indicators of abdominal fat. It is closely correlated to the higher waist-hip ratio, but is thought to be a more reliable measure of abdominal fat; the higher waist-hip ratio, can mask the status of abdominal obesity with a disproportionately large hip circumference(7).

Central obesity and a higher waist-hip ratio have been linked with the development hyperinsulinemia, insulin resistance, dyslipidemia, pro-inflammatory and pro-thrombotic clinical states. Moreover, excess body fat has also been regarded as the single most important determinant of type 2 diabetes, whereas higher muscle mass is associated with better insulin sensitivity and lower risk of diabetes (8).

1.1.2 Rationale of the study:**Globally**

The population worldwide have faced a growing epidemic of abdominal obesity, the prevalence of overweight and obesity is increasing in both developed and developing countries. Abdominal obesity is a major risk factor for many chronic diseases including diabetes, hypertension and ischemic heart diseases, so it is considered a major Public health problem(1).

Nationally

Many women were suffering from abdominal obesity after delivery by Caesarean Section in our society.

Scarce information was published regarding the effect of Caesarean section on body weight and information was not detected about the association of CS and abdominal obesity.

1.1.3. Literature review

1.1.3.1. Abdominal obesity:

Waist Circumference cutoffs recommended for the diagnosis of abdominal obesity according to ethnicity and gender. Abdominal obesity is a multifactorial disorder arising from genetic, environmental, socioeconomic, and behavioral factors. These factors differ in their respective contributions to the abdominal obesity epidemic (9).

To enhance obstetric outcomes, women should gain weight during pregnancy. According to the Institute Obesity Medicine for obese women (body mass index of 30 kg/m or more), the gestational weight gain should be 5 to 9 kg or 11 to 20 lbs; for underweight women (BMI<18.5), it should be 12.5 to 18 kg or 28 to 40 lbs. After childbirth, women need to lose the remaining gestational weight gain, as retention of that weight gain has been linked with long-term overweight or obesity issues and associated morbidity such as diabetes, hypertension, and heart disease (10).

The period for pregnant women to loss gained weight after delivery is 3 months (11).

Accumulation of intra-abdominal fat is associated with higher metabolic and cardiovascular disease risk. The amount of abdominal fat can be assessed by waist circumference which highly correlates with intra-abdominal fat content (12).

Waist measurement is a measurement which indicates the need for weight management and reflects coronary risk related to both overweight and a central fat distribution (13).

Body fat percentage is a more precise assessment of adiposity. The techniques of skin fold measurements and bioelectric impedance assays can be used, but skin fold measurements may not be accurate, Cutoff levels for body fat percentage selected by WHO are used to stratify health risks associated with overweight and obesity. Excess body fat contributes to around 58% of cases of type 2 diabetes, 21% of heart disease and between 8% and 42% of certain cancers (breast, colon and endometrial) (14).

1.1.3.2. Definition:

Abdominal obesity, also known as central obesity, is when excessive abdominal fat around the stomach and abdomen has built up to the extent that it is likely to have a negative impact on health (8).

1.1.3.3. Classification:

This table explain the classification by body mass index, waist circumference and presence of co-morbidities .

Table (1-1):Classification by body mass index, waist circumference and disease risk (15).

	BMI (Kg/m ²)	Obesity Class	Disease Risk	
			Low Waist Cir.	High Waist Cir.
Under Weight	< 18.5	—		
Normal	18.5 - 24.9	—		
Over Weight	25 - 29.9	—	Increase	High
Obesity	30 - 34.9	I	High	Very High
	35 - 39.9	II	Very high	Very High
Extreme Obesity	≥ 40	III	Extremely high	Extremely High

This table explain that when the individual had BMI (25-29.9) Kg/m² and waist circumference <88 cm ,disease risk would be increase and it was high when WC >88cm, the individual had BMI (30-34.9) Kg/m² ,obesity class I and II with waist circumference <88 cm ,disease risk would be high and it was very high when WC >88cm while the individual who had extreme obesity BMI > 40 kg/m² and waist circumference < or> 88 cm ,disease risk would be extremely high .

1.1.3.4. Epidemiology of obesity in Iraq:

The prevalence of obesity in adults is increasing worldwide, particularly among women of child bearing age. In Iraq, according to the Ministry of Health report the prevalence of obesity in women in reproductive age was 38.2% in 2006 . Moreover in Baghdad between 1997 and 2007 the prevalence of obesity among women in reproductive age increased from 23.6 to 25% (8). WHO Step wise non-communicable disease. Risk Factor Survey at 2015 showed that the prevalence of overweight was 30.6% for adults female, while the prevalence of obesity was 42.6% (16).

1.1.4.Obesity and women health:

1.1.4.1. Pre pregnancy obesity

Contributes to the development of many pregnancy complications including pregnancy-induced hypertension, preeclampsia, gestational diabetes, CS, and neonatal death . Compounding this finding is the fact that performing a cesarean section is more difficult in obese women .Rates of fetal anomalies are increased in obese mothers as well, including neural tube defect, spina bifida, cardiovascular anomalies , and cleft lip and palate. However ,maternal obesity was protective for gastroschisis(17)

1.1.4.2. Obesity and Pregnancy

Obesity causes pregnancy complications because of elevated risks of antepartum complications and mechanical difficulties with delivery. Obesity during pregnancy is related to higher overall health care expenditures, measured by length of stay after delivery and use of other services. The majority of this difference is caused by higher cesarean section rates and higher rates of high-risk obstetric conditions such as diabetes and hypertension (18).

1.1.4.3. Obesity and Breastfeeding

Maternal obesity is associated with a decreased intention to breastfeed, decreased initiation of breastfeeding, and decreased duration of breast feeding. Some of these effects may be cultural, having to do with one's body image, or physiologic caused by metabolic and hormonal effects of adipose tissue (ie, decreased milk supply) (19).

1.1.5. Etiology of Visceral Obesity

The propensity to preferentially accumulate visceral fat in conditions of excess energy intake is highly variable from one individual to the other. The mechanisms that could explain associations between visceral adiposity and cardio metabolic risk also likely involve many possible phenomena and pathways(20).

The following sections will review the main etiological factors contributing to visceral fat accumulation .

A. Age

Age was found to be a strong correlate of selective abdominal adipose tissue accumulation as estimated by an increased waist circumference. In young individuals (men and women) and middle-aged women, excess energy is preferentially stored in subcutaneous fat depots, although visceral adipose stores may also increase in genetically susceptible individuals (21).

The ratio of abdominal subcutaneous to visceral adipose tissue has been shown to be markedly higher in women than in men and to decrease with age in both genders. Estimation visceral adipose tissue area assessed by CT increases with age at a rate of 2.36 cm/yr in non-obese women (22).

B. Genetics

Separation analyses even pointed toward a major gene effect accounting for 51% of the variance in visceral adipose tissue accumulation. This notion is further supported by seminal twin studies in which weight gain was induced by overfeeding. These studies showed that the variance in visceral adipose tissue gain between pairs of twins was approximately six times higher than within twin pairs, again supporting a major genetic effect on visceral fat distribution. Family studies have shown a clear clustering of visceral adiposity (23).

C. Endocrine and Metabolic Factors

Specific identifiable endocrine or metabolic disorders known to cause obesity account for less than 1% of the obese population (24).

D. Neuroendocrine Factors

The rarely seen neuroendocrine causes for obesity result from injury to the ventromedial hypothalamus, the result of tumor, trauma, or surgery to the posterior fossa. Other symptoms indicative of endocrine and neurologic abnormalities (15).

E. Cushing's Syndrome

This endocrine disorder is associated with central obesity and “buffalo hump” along with axillary striae, glucose intolerance and hypertension. In children with Cushing's syndrome, linear growth is restricted (25).

F. Polycystic Ovary Syndrome

More than 50% of women affected by polycystic ovary syndrome this relatively common disorder are obese. Some controversy surrounds whether is a cause or consequence of obesity, although most evidence points to the latter. Other common features include menstrual irregularities, hirsutism, and elevated testosterone and luteinizing hormone blood levels. Insulin resistance is a consistent finding, even in the absence of obesity. This resistance is thought to be associated with other findings in poly cystic ovary syndrome, although exact mechanisms are unclear (26).

G .Growth Hormone Deficiency

Although growth in height is impaired in growth hormone deficiency, there is also an increase in truncal obesity. This corrects with replacement of growth hormone (27).

K. Nutritional Factors

Only a few studies identified nutritional factors that could predispose to specific accumulation of visceral fat. Which including monounsaturated fat to the diet (Mediterranean diet) prevented visceral fat gain within an isocaloric design including other types of dietary fats. Consistent with this study, a large epidemiological survey has shown that adherence to the Mediterranean diet was associated with lower waist circumference values independent of BMI in both sexes (28).

J. Sedentary Lifestyle/Physical Inactivity

The regular physical activity/exercise could induce a substantial reduction in visceral adiposity even in the absence of weight loss. Studies that have compensated for the energy expenditure of exercise sessions by a corresponding increase in energy intake have nevertheless shown a loss of visceral adipose tissue (between 10 and 19%) associated with exercise training programs (29).

The regular exercise can increase fat free mass. This will be the key difference between an energy deficit produced by caloric restriction or by regular exercise. For instance, a negative energy balance resulting from caloric restriction and inducing weight loss should mobilize the visceral fat depot probably to the same extent as regular exercise (30).

L. Medication:

Many agents, including corticosteroids, beta blockers, psychoactive drugs and diabetic drugs are well known to cause weight gains, the mechanism behind most of them is by increasing appetite. Always, the doctors cannot avoid prescribing these drugs, but one should inform the patient that

weight gain is one of the side effects of these drugs and to take action to prevent it such as increasing physical activity (15).

1.1.6. Medical Complications of obesity

1.1.6.1. Obesity and Infertility (Including Polycystic Ovary Syndrome)

The impact of obesity and Polycystic Ovary Syndrome (PCOS) on reproductive function can be attributed to multiple endocrine mechanisms. Abdominal obesity is associated with an increase in circulating insulin levels. This results in increased functional androgen levels (caused by suppression of sex hormone-binding globulin synthesis and increased ovarian androgen production) (31).

The resulting hyper androgenism and menstrual cycle abnormalities are clinically manifested in part by an ovulatory cycles and subfertility. Additionally, leptin inhibits ovarian follicular development and steroid genesis and thus may contribute to reproduction difficulties in obese women. The impact of obesity on reproduction starts at a young age (32).

1.1.6.2.Hypertension

The obesity-related increase in blood pressure (BP) is associated with an increase in vascular resistance as well as sodium resorption. The increased vascular tone may reflect increased sympathetic tone because of insulin resistance and the resultant increase in insulin levels (33).

1.1.6.3.Dyslipidemia

Obesity is associated with elevated TG levels, reduced (HDL-C), and an increase in the more atherogenic, small, dense LDL particles. Despite

common belief, obesity causes only a small mean elevation in total and (LDL-C) values(15).

1.1.6.4.Type 2 Diabetes Mellitus

the prevalence of type 2 diabetes mellitus increased from 4.9% in 1990 to 7.9% in 2000, this change has been clearly linked to the increase in obesity. The risk of T2DM is lowest below a BMI of 22 to 23 kg/m². At a BMI of 31, the risk for women is 40-fold greater than in women with a BMI less than 22. Up to 80% of cases of T2DM can be attributed to overweight and obesity (34).

1.1.6.5.Metabolic Syndrome

The metabolic syndrome brings together a number of the comorbidities associated with obesity. The definition used by National Cholesterol Education Program (NCEP) .Adult Treatment Panel III requires the presence of three of the following five disorders:(1) BP elevation of at least 130/85 mm Hg, (2) serum TG level higher than 150 mg/dL, (3) HDL-C level less than 50 mg/dL in women and 40 mg/dL in men, (4) fasting blood glucose level at least 110 mg%, (5) waist circumference more than 35 inches(88cm) in women and 40(102cm) inches in men (35).

1.1.6.6. Heart Disease

The presence of obesity in the absence of other risk factors may lead to cardiomyopathy and congestive heart failure as the workload of the heart increases. Beyond the direct impact on cardiac function, obesity may be an independent risk factor for Coronary Artery Disease (CAD). Obesity is associated with a number of well-established risk factors for Coronary Artery Disease, and most of the increased risk associated with obesity is caused by these factors. For women with BMI more than 29 kg/m², Coronary Artery

Disease(CAD) risk increases 3.3-fold compared with women with BMI less than 21 kg/m² (36).

1.1.6.7.Cancer

It was estimated that overweight and obesity played a role in 14% of cancer deaths in men and 20% in women. The mechanisms accounting for the increased risk of cancers vary with the primary site. One proposed mechanism for endometrial and breast cancer is an increase in circulating estrogen levels. Central obesity in particular has been associated with breast cancer (37,38).

1.1.6.8.Obstructive Sleep Apnea

Although Obstructive Sleep Apnea(OSA).It is not always associated with obesity, excessive weight is a major risk factor. About 70% of OSA patients are obese. The increased risk may be related to increased neck circumference and pharyngeal fat deposits. Obstructive Sleep Apnea(OSA) has impact of disruptive snoring and has been associated with systemic effects as well, such as pulmonary hypertension, right-sided Congestive Heart Failure (CHF) (39).

1.1.6.9. Fatty Liver Disease

Fatty liver disease is the most common reason for elevated serum liver enzymes. First described in obese diabetic females, fatty liver disease is widely recognized as a complication of obesity and is associated with the features of the metabolic syndrome (40).

1.1.6.10. Orthopedic Disorders

Obesity-related cytokine production has been associated with a chronic inflammatory state promoting osteoarthritis . Obesity is associated with

increasing the risk of falls. Functional impairment from obesity in elderly persons has been linked to these factors (15).

1.1.6.11. Gallbladder Disease

Obesity, hyper-insulinemia and the metabolic syndrome, are risk factors for gallbladder disease, because cholesterol production increases with weight gain, and cholesterol is excreted into bile. The increased cholesterol relative to bile acids can lead to the formation of stones. (41).

1.1.6.12. Psychological Impact

This may result in poor body image, especially in young women. Eating disorders, can complicate the management of obesity. In adults, obesity is associated with depression in women, although not in men (42).

1.1.7. Management of visceral obesity

Appropriate management of obesity complications in addition to weight management should include management of dyslipidemia, optimizing glycemic control in type 2 diabetic patients, normalizing blood pressure in hypertension, management of pulmonary disorders, attention to pain control and mobility needs in osteoarthritis, management of psychosocial disturbances including affective disorders, eating disorders, low self-esteem and body image disturbance. Obesity management may reduce the need to treat co-morbidities by drugs (43).

Practical Weight Loss Objectives A 5–15% weight loss over a period of 6 months is realistic and of proven health benefit .A greater (20% or more) weight loss may be considered for those with greater degrees of obesity (BMI ≥ 35 kg/m²) . Maintenance of weight loss and prevention and treatment of co-morbidities are the two main criteria for success (44).

A. Non pharmacology:**Step 1 : Healthy Diet.**

Eating a healthy diet. Reducing calorie intake helps losing midsection fat after a C-section. Eating foods that are low in calories like fruits, vegetables, whole-grains, lean sources of protein and dairy are good options (45).

Step 2:physical activity.

Complete at least 150 minutes of moderate intensity activity each week to lose belly fat , recommends the Centers for Disease Control and Prevention after 3 months postpartum . Examples include walking baby at a brisk pace in the stroller or biking on level surfaces (46).

Step 3: Daily activity.

Using interval training to increase calorie burning and lose belly fat quicker. Interval training alternates between moderate and vigorous activity to build strength and burn midsection weight. For example, start out walking at a brisk pace. After a few minutes, increase your intensity to a vigorous pace with running. Rotating between the two activities for 30 minutes or longer (47).

Step 4 :Exercise.

Tone belly with strength training exercises at least twice weekly. The abdominal hold is an exercise that targets the lower section of your tummy. Sit on the edge of a chair. Slowly lift your feet about 2 to 4 inches off the floor and hold the contraction for five to 10 counts. Repeat for a minute. Another effective belly toning exercise is abdominal hollowing.(48)

1.2. Caesarean section

Since 1985, the international healthcare community has considered the ideal rate for caesarean sections to be between 10% and 15%. Since then caesarean sections have become increasingly common in both developed and developing countries for a variety of reasons. When medically justified, caesarean section can effectively prevent maternal and prenatal mortality and morbidity. However, there is no evidence showing the benefits of caesarean delivery for women or infants who do not require the procedure. As with any surgery, caesarean sections are associated with short and long term risk which can extend many years beyond the current delivery and affect the health of the women(49).

The WHO recommends that they should be done based on medical need and in many cases they are lifesaving for the mother and baby (49).

1.2.1. Definition:

Caesarean section was defined by mudaliar and menons clinical obstetrics, is removal of the child through an incision in the abdominal wall of an intact uterus the term should not be applied to the removal of child from abdomen after rupture of uterus with or without protrusion of the whole or part of the child into peritoneal cavity, nor to an operation for abdominal pregnancy(50).

Caesarean section, is the use of surgery to deliver one or more babies. A Caesarean section is often performed when a vaginal delivery would put the baby or mother at risk. (51).

1.2.2 History of caesarean section:

The first modern cesarean section was performed by German gynecologist Ferdinand Adolf Kehr in 1881.4 The indications for CS has

varied tremendously through its documented history, and they have been shaped by religious, cultural, economic, professional and technological developments(52)

Caesarean section has been part of human culture since ancient times, but the early history of CS remains unclear. It is commonly believed to be derived from the surgical birth of Julius Caesar, but this seems unlikely, since his mother Aurelia is reputed to have lived to hear of her son's invasion of Britain (53).

1.2.3. Classification:

Traditionally, caesarean section has been classified as emergency or elective. However, with advanced practice in obstetrics, and more complicated deliveries encountered, this definition has become too simplistic and more detailed categories are needed. Therefore, distinguishing before labor cesarean section (which may be elective or emergency) and intrapartum cesarean delivery (which is, by default, emergency) is preferable (Table 3) (54).

Classification of the urgency of cesarean delivery has also been investigated by Lucas and colleagues and this has developed into the most consistent method recommended and approved by the Royal college of obstetrics and gynecology in the United Kingdom. Table 3 Classification of urgency of cesarean section (54).

Table (1-2): Classification of urgency of caesarean section	
Grade1: Emergency cesarean section	Immediate threat to the life of the woman or the fetus, i.e. placental abruption: antepartum; or uterine rupture: intrapartum
Grade 2: Urgent cesarean section	No immediate risk to the life of the woman or baby but delivery should be achieved as soon as possible, i.e. three previous cesarean sections, membranes are ruptured with meconium-stained liquor: antepartum; or non-reassuring CTG and FBS is not possible or contraindicated: intrapartum
Grade3: Nonscheduled	Delivery is needed but can fit in with delivery suite workload and allow for fasting/steroid administration and some degree of planning, i.e. preterm IUGR/PET
Grade4: Scheduled	Also referred to as elective. No urgency whatsoever, and procedure planned to suit woman, staff, delivery suite, etc. and carried out >39 weeks' gestation during the working day (i.e. not out of hours)

CTG, cardiotocograph; FBS, fetal blood sample; IUGR, intrauterine growth retardation; PET, pre-eclamptic toxemia Therefore, prelabor cesarean section could be any of the four categories explained, whilst intrapartum cesarean will only involve grades 1 and 2 (55).

1.2.4.Prevalence :

Several recent reports document rates of CS 32% in USA, 19.1% in Saudi Arabia, 9.29% in Jordan and 20.1% in Iraq. Interestingly also the rates of CS in Baghdad city were 17.9, 19 and 28.7% in 2007, 2009 and 2011; respectively(56).

1.2.3. Complications associated with cesarean section

Morbidity and mortality associated with the procedure cannot be totally avoided. The common complications are hemorrhage, anesthesia-related complication and infection. Prophylactic antibiotics are administered to reduce the incidence of infection. Occasionally there is injury to bowel, bladder, ureters or the fetus. Thromboembolism is rare but could be fatal and hence pre-, intra- and post-operative precautions should be taken to avoid it(57).

Intra operatively pneumatic inflatable boots are used for the legs and prophylactic dose of heparin is administered. Post-operatively the use of heparin, graded elastic stockings, mobilization and chest and leg physiotherapy are advocated to reduce the incidence of deep venous thrombosis (DVT)(58).

Late complications of wound infection and secondary hemorrhage are not that uncommon. Vesico- or uretero-vaginal fistulae due to visceral injury are extremely rare. Anesthetic complications are extremely rare due to the availability of experienced anesthetists and most CS being performed under regional anesthesia (59).

1.3. Objectives

To study the effect of cesarean section on body weight measurement in comparison with normal vaginal delivery.

Specific objectives:

1-to study the association of caesarean section and abdominal obesity.

2-to assess the effect of caesarean section on the body weight and waist circumference.

Chapter Two

Methodology

2.1. Study design & settings

A hospital based analytical cross sectional study was carried out in two hospitals (Al Haboobi teaching hospital and Bent-Al-Huda maternity and children hospital) in Al-Nasiriya city from first of November 2016 to 2nd of October 2017.

2.2. Population of the study

A sample was drawn 500 non pregnant women who attended the obstetric and gynecological outpatients, those women who had history of caesarean section or normal virginal delivery in these two hospitals for different purposes.

2.3. Inclusion criteria

A non-pregnant woman who had been delivered by caesarean section (before less than one year (6-11 months), 1_5 years and more than 5 years) in comparison with those who delivered normally.

2.4. Exclusion criteria

1. Pregnant women.
2. Non response women.
3. Women with medical disease like [polycystic ovarian syndrome, hypothyroidism, Cushing syndrome and diabetes mellitus] .
4. Women who had less than 3 months post-partum at the time of data collection(11).

5. Drug history like :

A- Contraceptive drugs, corticosteroid ,anti-histamine, anti-convulsant, anti-depressant, antipsychotic and psychotropic drugs (15).

Table (2-1): Main group of drugs that cause body weight gain.

Main group	Drugs
Anticonvulsant	Valproic acid, carbamazepine,
Antidepressants	Amitriptyline, imipramine, phenelzine.
Antihypertensive	Clonidine, methyldopa, guanabenz, terazosin, prazosin, nifedipine, propranolol
Antipsychotic	Chlorpromazine, haloperidol, clozapine, olanzapine, risperidone, quetiapine, thioridazine
Corticosteroid	Prednisolone, dexamethasone, betamethasone
Psychotropics	Lithium
Sulphonylureas	Glibenclamide, glipizide

B- Women taking weight burning agents like Orlistat, Lorcaserin, Sibutramine, Metformin, Rimonabant.

2.5.Sampling:**2.5.1.Sample size calculation**

An appropriate sample size was calculated by applying the following equation:

$$n = (z^2 pq) / d^2 \times \text{design factor (1.3)} \quad (60)$$

n= sample size

z= z statistic for a level of significance

p= estimated prevalence rate in previous studies which was(42.6%).

$$q = (1-p)$$

d= precision

A precision 5% and confidence level 95% and the prevalence of obesity among women was 42.6% in 2015 in Iraq (61) so the needed sample size for infinite population is equal to.

$$n = (1.96)^2 \times 0.426 \times 0.576 / (0.05)^2 \times (1.3) = 490$$

we add (10) individuals to overcome the refusal rate which was calculated according to pilot study that involve (30) women where one to participate in the study refusal rate (0.1).

2.5.2.Sampling procedure:

A married women who attended the obstetric and gynecological outpatient clinic in the nominated hospitals were included depending on the inclusion and exclusion criteria.

2.6. Data collection

Before data collection a pilot study was conducted on 30 women who had history of caesarean section and who had history of normal vaginal delivery prior to the proper study in order to test the feasibility of the research and time requirement. All those (30) cases were included in the proper study.

Before interviewing the women, the purpose of the study was explained, the questionnaire was clarified and the idea behind taking the anthropometric measure was also explained. The women were informed that, they were free in their participation in the study. The importance about honesty in their response also was discussed and informed verbal consent was taken. Finally, the collected data were revised at the end of the day for completeness.

2.7.The study tools:

2.7.1 The questionnaire (Appendix 1)

The questionnaire A special form of questionnaire was constructed to gather data and it was reviewed and revised by three subject matter experts in (medicine, community medicine and gynecology) for testing the validity and enrichment of the questionnaire, It includes different variables that are suspected to be associated with obesity among enrolled participants. These variables are titled under two main categories: socio demographic variables and obstetric variables.

The questionnaire consisted of three sections:

Section (1): includes questions about the socio demographic characteristics

(Name, age, residency, percapita monthly income ,occupation , educational status , socioeconomic state)

Section (2): includes questions about obstetric history

[Parity, mode and time of the last delivery, types of feeding], past medical history ,drug history .

2.7.2. Anthropometric measure:**A-Weight measurement:**

The posture of the subject at the time the measurement is taken influences the accuracy of the measurement. Thus, the WHO STEPS recommends that the subject stands with arms at the sides, feet positioned close together, and weight evenly distributed across the feet (WHO, 2008) (62).

It was taken to the nearest 0.1kg by using digital weight scale for all participants with a well calibration while the woman bare footed and wearing light clothes with an accepted error of 0.1 kg; the balance of scale was performed by the researcher in isolated room in outpatient clinic in the nominated hospitals .

B- Height measurements:

After taking weight measurement ,the height measurement was performed by using portable height measure to the nearest 0.5 cm, the woman stands with feet together, head in a horizontal way and without shoes.

C- Waist circumference measurement:

The researcher measured the waist circumference for participant. It was performed by asking the participant to relax and take a few deep, natural breaths before the actual measurement is made (WHO, 2008) (62).

The WHO stepwise approach had been followed for measuring waist circumference measurement be made at the approximate midpoint between the lower margin of the last palpable rib and the top of the iliac crest as seen from anterior view to the nearest 0.5 cm. and the measurements should be taken at the end of a normal expiration. Each measurement repeated twice by the researcher; if the measurements are within 1 cm of one another, the average had been calculated. If the difference between the two measurements exceeds 1 cm, the two measurements had been repeated.

- BMI was calculated by using the standard formula (63):

$$\text{BMI} = \text{weight (kg)} / \text{height (m)}^2$$

According to the WHO and International Task Force (63), the weight status classified into four categories: (underweight with BMI < 18.5, normal weight with BMI =18.5-24.9, overweight with BMI 25-29.9 and obese with BMI ≥ 30).

Iraqi population didn't have cut off point criteria for waist circumference as an indicator of co morbidities risk, the standard adopted by WHO was used in the present study to evaluate the risk; so WC of > 88 cm for female was considered as indicator of risk factor (64).

2.8. procedures of recording , coding and checking of data :

The data directly registered in the questionnaire form at the work field and checked daily and weekly .

2.9.Statistical analysis:

All collected data were entered in to computerized statistical software; Statistical Package for Social Sciences (SPSS) version 23 was used. Descriptive statistics are presented as (mean $\pm$ standard deviation) and frequencies as percentages. Multiple contingency tables were conducted and appropriate statistical tests were performed, Chi-square was used for categorical variables and Fishers exact test was used when more than 33% of the cells expected variable was less than 5. In all statistical analysis the level of significance (p value) sets at < 0.05 and the results are shown as tables. Statistical analysis of the study was done by a Community Medicine specialist.

2.10. Definition of Variable:**section (1)**

1. Age :reproductive age women (15-49) years.

2. Occupation:

Employee: A- governmental B-Non-governmental.

Housewife

3. Per capita Monthly income

Less 250,000 ID & Equal 250,000 ID and above

*Family member number: classified as the following (65) :

<6 members.

6-10 members.

>10 members.

4. Socioeconomic Status Measurement (low, medium, high).

❖ The socioeconomic status:

It was classified into three categories; low, moderate and high socioeconomic status according to the following scoring system:

- Residence:

A: living in an owned or a rented house scored as (1)

B: living in an illegal house scored as (0)

- Power supply of the house:

A: if having 1 or 2 sources scored as (1)

B: if having 3-5 power sources scored as (2)

C: 6 and more power sources scored as (3)

- Private car:

A: if the family have a private car scored as (1)

B: if there's no car scored as (0)

So the socioeconomic status for each patient was calculated as the following:

- If the score is equal or less than 2, refers to a low socioeconomic status
- If the score is between 3 and 4, indicates a moderate socioeconomic status.
- If it is more than 4, refers to a high socioeconomic status (66) .

5. Residency :(Urban, Rural).

6. Education level measurement: It was classified according to international standard classification of education 2011 into illiterate, primary schools, secondary schools, and basic college and above (tertiary level).(67)

Section (2)

1. Parity: Parity, indicates the number of pregnancies reaching viable gestational age (including live births and stillbirths). The number of fetuses does not determine the parity. Twin pregnancy carried to viable gestational age is counted as 1 .

2. Mode of delivery:

1-Normal Vaginal Delivery

2-Cesarean section

2- A- types (elective and emergency)

2- B- number

2- C- period since last delivery : It includes:

- women who had history of CS before less than one year (6-11) months
- [1-5] years
- Those with caesarean section before more than five years

3. Types of feeding:

(breast, bottle and mixed)

4. Medical disease

Cushing syndrome

Hypothyroidism

Diabetic mellitus

Polycystic ovarian syndrome

Chapter Three

Results

Table (3-1): Socio demographic characteristics of the participant women.

Variables	No.	%
Age (mean $\pm$ SD 32.13 $\pm$ 7.5 years)		
15-19 years	10	2.0
20-29 years	184	36.8
30-39 years	215	43.0
≥ 40 years	91	18.2
Total	500	100
Occupation		
Employed	147	29.4
Housewife	353	70.6
Total	500	100
Per capita monthly income		
< 250 000ID	175	35.0
≥ 250 000ID	325	65.0
Total	500	100
Family members		
< 6	58	11.6
6-10	191	38.2
> 10	251	50.2
Total	500	100
Socioeconomic status		
Low	117	23.4
Medium	322	64.4
High	61	12.2
Total	500	100
Residency		
Urban	373	74.6
Rural	127	25.4
Total	500	100
Educational level		
Illiterate	129	25.8
Primary	111	22.2
Secondary	165	33.0
University and above	95	19.0
Total	500	100

This table shows the socio demographic characteristics of the participant women ; A total of 500 of participants women were included in

this study with mean age 32.13 ± 7.5 years , Around (1/2) of them 43% were at age group 30-39 years . Most of them 70.6% were housewives and 29.4% were employed . More than (1/2) of the women 65.0% with $\geq 250\,000$ ID per capita monthly income. Half of them lived in families with $\geq$ ten members. About (2/3) of the women 64.4% at the moderate socioeconomic status and 12.2% of them were at high socioeconomic status. About (3/4) of the women 74.6% lived in urban area and 25.4% lived in rural area. The educational level of the participant women distributed as the following ;25.8 % illitrate,22.2% primary level, 33 % secondary level and 19% at university level and above.

Table (3-2): Obstetric history of the participant women

Variables	No.	%
Parity		
1-2	169	33.8
3	99	19.8
≥ 4	232	46.4
Total	500	100
Mode of delivery		
Vaginal	250	50.0
Cesarean section	250	50.0
Total	500	100
Duration from last delivery		
6-11 months	13	2.6
1-5 years	398	79.6
> 5 years	89	17.8
Total	500	100

This table shows the obstetric history of the participant women, around half of the women 46.4% were para four and more, half of the women had normal vaginal delivery and majority of them 79.6% had(1-5) years period since a last delivery.

Table (3-3): Body mass index and waist circumference of the participant women.

Variables	No.	%
BMI (mean $\pm$ SD 29.5$\pm$ 4.6 kg/m²)		
Non- obese	89	17.8
Obese	411	82.2
Total	500	100
Waist circumference (mean $\pm$ SD 91.8$\pm$9.8 cm)		
≤ 88	179	35.8
>88	321	64.2
Total	500	100

This table shows mean BMI of the participant women were 29.5 $\pm$ 4.6 kg/m²; 82.2% were obese. The mean waist circumference of the participant women were 91.8 $\pm$ 9.8 cm; more than half of them 64.2% had a waist circumference >88 cm.

Table (3-4): Distribution of socio demographic characteristics of participant women according to their mode of delivery.

Variables	Vaginal delivery		Cesarean section		x ²	P
	No	%	No.	%		
Age					17.7	0.002
15-19	8	3.2	2	0.8		
20-29	108	43.2	76	30.4		
30-39	102	40.8	113	45.2		
≥ 40	32	12.8	59	23.6		
Total	250	100	250	100		
Occupation					7.74	0.02
Employed	57	22.8	90	36.0		
Housewife	193	77.2	160	64.0		
Total	250	100	250	100		
Percapita monthly income					3.87	0.029
< 250 000ID	98	39.2	77	30.8		
≥ 250 000 ID	152	60.8	173	69.2		
Total	250	100	250	100		
Family members					0.317	0.75
< 6	27	10.8	31	12.4		
6-10	96	38.4	95	38.0		
≥ 10	127	50.8	124	49.6		
Total	250	100	250	100		
Socio economic status					1.22	0.54
Low	62	24.8	55	22.0		
Medium	161	64.4	161	64.4		
High	27	10.8	34	13.6		
Total	250	100	250	100		
Residency					17.09	0.001
Urban	172	68.8	201	80.4		
Rural	78	31.2	49	19.6		
Total	250	100	250	100		
Educational level					19.87	0.001
Illiterate	84	33.6	45	18.0		
Primary	43	17.2	68	27.2		
Secondary	79	31.6	86	34.4		
University and above	44	17.6	51	20.4		
Total	250	100	250	100		

It was observed that, there was significant association between mode of delivery and each of the following: age, occupation, percapita monthly income, residency and educational level ($p < 0.05$). All these results are shown in table (3-4).

Table (3-5): Distribution of BMI of participant women according to their mode of delivery

Variables	Obese		Non- obese		χ^2	P
	No.	%	No.	%		
Caesarean Section	230	56.0	20	22.5	72.86	.0001
Vaginal delivery	181	44.0	69	77.5		
Total	411	100	89	100		

This table shows the distribution of BMI of the participant women according to their mode of delivery, it was observed that, there was significant association between the mode of delivery and Body mass index ($p < 0.05$), the proportion of obesity was 56% among women who had history of caesarean section and 44% among women who had history of normal vaginal delivery while proportion of Non-obese women was high 77.5% among those who had been delivered normally and low 22.5% among those who had history of caesarean section.

Table (3-6): Distribution of Waist circumference of participant women according to their mode of delivery

Variables	Obese		Non- obese		x ²	P
	No.	%	No.	%		
Caesarean Section	230	71.7	20	11.2	17.98	.0001
Vaginal delivery	91	28.3	159	88.8		
Total	321	100	179	100		

This table shows distribution of waist circumference of the participant women according to their mode of delivery, it was observed that, there was significant association between the mode of delivery and waist circumference ($p < 0.05$), the proportion of abdominal obesity was high 71.7% among women who had history of caesarean section while proportion of abdominal obesity was low 28.3% among those who had history of normal vaginal delivery.

Table (3-7): Distribution of abdominal obesity according to the number and duration from last cesarean section.

Variables	Waist circumference ≤ 88		Waist circumference > 88		χ^2	P
	No.	%	No.	%		
No. of cesarean section					13.82	0.02
1	14	70.0	34	14.6		
2	5	25.0	47	20.4		
≥ 3	1	5.0	149	65.0		
Total	20	100	230	100		
Duration last Cesarean section					1.482	0.71
6-11 months	0	0.0	6	2.6		
1-5 years	16	80.0	182	79.1		
> 5 years	4	20.0	42	18.3		
Total	20	100	230	100		

This table shows the distribution of waist circumference according to the number of cesarean section and duration; It was observed that, there was significant association between abdominal obesity and number of caesarean section ($p < 0.05$), but no significant association between abdominal obesity and duration since delivery by caesarean section.

Table (3-8): Distribution of waist circumference according to the type of cesarean section.

Variables	Obese		Non- Obese		χ^2	P
	No.	%	No.	%		
Elective cesarean section	177	76.9	14	70.0	.726	0.039
Emergency cesarean section	53	23.1	6	30.0		
Total	230	100	20	100		

This table shows the distribution of abdominal obesity according to the type of caesarean section; It was observed that, there was significant association between type of cesarean section and abdominal obesity proportion of abdominal obesity was high 76.9% among women who had elective caesarean section while it was low 23.1% among those who had history of emergency caesarean section ($p < 0.05$) .

Table (3-9): Distribution of BMI according to the type of cesarean section.

Variables	Obese		Non- Obese		χ^2	P
	No.	%	No.	%		
Elective cesarean section	179	77.8	12	60.0	8.935	.020
Emergency cesarean section	51	22.2	8	40.0		
Total	230	100	20	100		

This table shows the distribution of BMI according to the type of cesarean section; It was observed that, there was significant association between type of cesarean section and BMI ($p < 0.05$).

Table (3-10): Distribution of abdominal obesity according to the type of feeding.

Type of feeding	Waist circumference ≤ 88 cm		Waist circumference > 88 cm		χ^2	p
	No.	%	No.	%		
Breast feeding	101	56.7	117	36.3	7.785	0.07
Formula feeding	61	34.3	173	53.7		
Mixed feeding	16	9.0	32	10.0		
Total	178	100	322	100		

This table shows there was no significant association between abdominal obesity and type of feeding among women with reproductive age group.

Table (3-11): Logistic regression

Variables	Score	Sig.	Odds ratio
Occupation	8.202	.042	_1.9
Monthly income	3.877	.049	0.6
Residency	17.093	.0001	2.3
Educational level	19.870	.001	0.7
Number of caesarean section	500.000	.0001	34.9
Body mass index	72.884	.0001	4.3
Waist circumference	170.982	.0001	_20
Age	17.739	.0001	0.5
socioeconomic status	1.222	.543	
Overall Statistics	500.000	.000	

Multivariate analysis was performed for independent variables to study the association with mode of delivery. proved that waist circumference and number of caesarean section was very high significant, occupation was high significant.

Chapter Four

Discussion

4.1. Discussion

Obesity has become a major public health problem both in developed and developing countries. Overweight and obesity are the fifth leading risk for global deaths. At least 2.8 million adults die each year as a result of being overweight or obese. In addition, 44 % of the diabetes burden, 23 % of the ischemic heart disease burden and between 7 and 41 % of certain cancer burdens are attributable to overweight and obesity(68) .

According to a recent research reports, the burden of obesity is increasing in developing countries and also no significant reduction has been seen in its burden in developed countries over the past few decades. For example, in West Africa, the prevalence of obesity rapidly increased during the last two decades of the 20th century and it continues to increase in the 21st century(69)

WHO recognizes obesity as a global health issue with one billion adults worldwide identified as overweight and an additional 300 million obese. Globally, it has affected developed and developing countries . Women in particular have a high prevalence of obesity . Obesity has been found to have many harmful effects for women of reproductive age. Obese women are more likely to encounter problems becoming pregnant and are more prone to miscarriage during early pregnancy (70).

The purpose of the present study was to study the effect of caesarean section on body weight and waist circumference among women in al Nasiriya city .

In the present study the proportion of obesity was 82.2% and abdominal obesity was 64.2%, similar studies could not be detected to compare these findings with it .

In the present study there was significant association between the mode of delivery and each of BMI and waist circumference. Proportion of obesity was 56.0% in women who had history of caesarean section compared to proportion of obesity 44% in women who had history of normal vaginal delivery (p value < 0.0001). So the obesity was high among women with Caesarean Section. There were significant changes in the body weight among women after delivery .

Regarding the proportion of abdominal obesity was 71.7 % in women who had history of caesarean section compared to those who had history of normal vaginal delivery was 28.3% (p value was < 0.0001). This revealed that caesarean section had more risk for abdominal obesity, similar studies could not be detected to compare the findings in present study with it.

there was no explanation for developing abdominal obesity , increment in the body weight after caesarean section.

The fact that the association is robust to different populations suggests that the underlying mechanism between increased risk of Caesarean delivery and maternal obesity may be largely biological (11).

There was significant association between waist circumference and number of cesarean section ($p < 0.05$) this may be due to accumulated effect of CS on the abdominal adipose tissue so increase number of caesarean section lead to more destruction to adipose tissue and decreased tissue elasticity which lead to hyper proliferation of adipocytes . There was no significant association between waist circumference and duration after caesarean section ($p > 0.05$) .most previous studies evaluated the association between maternal

obesity and caesarean section (maternal obesity is a risk factor for caesarean delivery) in present study the aim to study the association between caesarean section and abdominal obesity (caesarean section is a risk factor for maternal abdominal obesity).

In present study there was significant association between type of cesarean section and waist circumference($p < 0.05$) ,the proportion of abdominal obesity in elective caesarean section was 76.9% as compared to women with emergency cesarean section 23.1% and there was also significant association with body mass index, the proportion of obesity was high among women with elective cesarean section 77.8% as compared to women with emergency caesarean section 22.2% , also no similar study could be found to compare the present findings and there was no explanations for increasing body weight and waist circumference after delivery by caesarean section among child bearing women.

The findings in current study revealed , there were no significant association effects between abdominal obesity and type of feeding. These findings were similar to a previous study in United State of American were no significant effects of breastfeeding categories on adiposity (i.e. ,total fat mass, total lean tissue mass, percent body fat), fat distribution (visceral and subcutaneous abdominal fat) were found ($p > 0.05$) (71).

4.2. Limitations of the study

1. This study is a cross sectional study in which, the temporal relationship cannot be assessed.
2. Variability in cutoff point value of waist circumference and variables between different Etheneties.
3. Possibility of selection bias.
4. There were no studies at national level about the effect caesarean section on the body weight and waist circumference among child bearing women.
5. Body mass index and waist circumference of child bearing women before pregnancy which are not available in medical records in the health care units to compare it with BMI and waist circumference after delivery to explore whether mode of delivery had effect on body weight or not.

Chapter Five

Conclusions and recommendations

5.1. Conclusions

Abdominal ,overweight and obesity were common among women in reproductive age group in AL Nasiriya city .

Proportion of abdominal obesity was higher in women who had history of caesarean section than normal vaginal delivery and it increased with increasing the number of caesarean section .

5.2. Recommendations:

The results in current study highlight the need for further attention to the health and wellbeing of women of reproductive age in order to prevent the epidemic of obesity and related health problems.

1. Health service providers should Healthcare practitioners should routinely do strict follow up of all women after delivery by Caesarian section by measure of body mass index and waist circumference, frequent laboratory tests through primary care physicians and obstetricians/gynecologists .
2. An effective national obesity prevention strategy is needed and should start early, in the younger age groups.

3. Advise all women after caesarean section do exercise :

A- Sit on the edge of a chair. Slowly lift your feet about 2 to 4 inches off the floor and hold the contraction for five to 10 counts. Repeat for a minute.

B- Start out walking at a brisk pace. After a few minutes, increase your intensity to a vigorous pace with running. Rotate between the two activities for 30 minutes or longer .

(all participant women was not perform exercise in proper way).

4. Large sized longitudinal studies on the relationship between CS and AO must be supported at the country level.

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Appendix 1: study questionnaire

The effect of Cesarean Section on The body weight and Waist Circumference in The women in AL- Nasiriya City in 2017

رقم الاستمارة: ()

.....
Verbal consent:

Domain (1) Socio demographic Characteristics

1. Name

2. Age

3. Occupation

3-1- employee

3-2- housewife

4. per capita Monthly income

4-1- < 250 000 ID

4-2- ≥ 250 000 ID

4-3- family member

5. socio economic status:(low, medium ,high)

5-1- Do you have living house?

owned house ☐ rented ☐ illegal ☐

5-2- how many power supply of the house do you have?

1 or 2 sources ☐ 3-5 power sources ☐ 6 and more power ☐
sources

5-3- Do the family have a private car?

Yes ☐ No ☐

6- Residency:

6-1- Urban

6-2- Rural

7- Educational level

7-1- illiterate

7-2- primary

7-3-secondary

7-4- university and above

Domain (2) Risk Factor of Obesity

1. Parity:

2. Mode of delivery

2-1- NVD:

2-2- C/S

A- types

2-2-A- 1- elective

2-2-A- 2- emergency

B- number

C- duration

3. Types of feeding

4. Medical disease

4-1-cushing syndrome

4-2- hypothyroidism

4-3- Diabetic mellitus

4-4- polycystic ovarian syndrome

4-5- No

5. Drug history

5-1-Anti convulsing

5-2- Oral contraceptive

5-3- Anti histamine

5-4- Antidepressant

5-5- Antipsychotic

5-6- Corticosteroid

5-7- Psychotropic

5-8- No

6. Exercise

7. height:

8. waist circumference:

9. Weight:

الخلاصة

خلفية البحث: أن معدل انتشار السمنة يزداد في البلدان النامية ودول العالم الثالث. والسمنة هي إحدى عوامل الخطر الرئيسية لعدد من الأمراض المزمنة كالسكر وارتفاع ضغط الدم وأمراض القلب، ولذلك تعتبر من مشاكل الصحة العامة الرئيسية.

الأهداف: تم إجراء هذه الدراسة لقياس مدى تأثير العملية القيصرية على وزن الجسم ومحيط الخصر بين النساء غير الحوامل اللواتي لديهن عملية قيصرية سابقة بالمقارنة مع النساء اللواتي لديهن ولادات طبيعية في مدينة الناصرية.

الطرائق: تعتبر هذه الدراسة دراسة مقطعية منفذة في اثنين من المستشفيات التعليمية لمدينة الناصرية (مستشفى الحبوبى التعليمي ومستشفى بنت الهدى التعليمي) للفترة ما بين الأول من شهر تشرين الثاني ٢٠١٦ ولغاية الأول من تشرين الثاني ٢٠١٧. النساء غير الحوامل اللواتي لديهن عملية قيصرية سابقة بالمقارنة مع النساء اللواتي لديهن ولادات طبيعية و اللواتي راجعن العيادات الخارجية لأقسام النسائية في هذه المستشفيات اختيروا بشكل عشوائي، تم تضمينها في هذه الدراسة. تم احتساب العينة البحثية بناءً على نسبة انتشار السمنة بين النساء في العراق (٤٢,٦٪)، وبنسبة دقة انتشار ٥٪ و مستوى ثقة ٩٥٪، يكون حجم العينة البحثية (٤٩٠) مشاركة وبعد اضافة ١٠ ٪ لتغطية النساء اللائي رفضن الاشتراك في هذا البحث، فيكون حجم العينة (٥٠٠). تم جمع البيانات بواسطة استمارة استبيان. شملت استمارة الاستبيان معلومات عن العمر، الوظيفة، عدد أفراد الأسرة، الدخل الشهري للأسرة، المستوى التعليمي، السكن، عدد الولادات الحية، نمط الولادة، نمط الرضاعة بعد الولادة، نوع النشاط الممارس أثناء أوقات الفراغ، تم قياس الوزن، الطول، محيط الخصر، ودليل كتلة الجسم لتقييم الحالة التغذوية. تم تحليل البيانات باستعمال الرزمة الاحصائية للعلوم الاجتماعية (أس بي أس أس) النسخة ٢٣ اعتبرت قيمة p أصغر من ٠,٠٥ ذات قيمة معنوية احصائياً.

النتائج: كان معدل كتلة الجسم (٢٩,٥+٤,٦) كغم / م^٢. فكان معدل انتشار السمنة ٨٢,٢٪ ومعدت انتشار السمنة البطنية ٦٤,٢٪. معدل انتشار السمنة أكثر بين النساء اللواتي لديهن عمليات قيصرية ٥٦٪ بينما ٤٤٪ بين النساء اللواتي لديهن ولادة طبيعية، بينما كان معدل انتشار السمنة البطنية أكثر شيوعاً بين النساء اللواتي ليهن عملية قيصرية مقارنة بالنساء اللواتي لديهن ولادة طبيعية (٧١,٧٪ مقابل ٢٨,٣٪ على التوالي).

الاستنتاجات: تدعم هذه الدراسة بأنه نمط الولادة له دور في تغير وزن الجسم ومحيط الخصر واتضح ان العملية القيصرية لها دور كبير في زيادة محيط الخصر مقارنة مع النساء اللواتي لديهن ولادة طبيعية.

تأثير العملية القيصرية على وزن الجسم ومحيط الخصر بين النساء في مدينة
الناصرية: دراسة مقطعية مستعرضة

أطروحة

مقدمة الى كلية الطب، جامعة ذي قار كجزء من متطلبات نيل شهادة
الدبلوم العالي في اختصاص طب الأسرة والمجتمع

إيمان عبد العباس حسين
بكالوريوس طب وجراحة عامة

تحت إشراف
الدكتور مسلم ناهي
الدكتورة ايناس صالح