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- **Basic Research**

## **Effect of Continuous Care Model on Quality of Life and Pregnancy Maternofetal Outcomes after Bariatric Surgery**

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### **Abstract**

Long-term outcomes after bariatric surgery and quality of life depend on how well-educated women are about how to support postoperative weight loss and engagement of health-related behavior need women to do. Nurses had an important role in caring of post bariatric surgery pregnant women to reduce maternal and neonatal risks. **Aim** of the current study was to evaluate the effect of continuous care model on quality of life and maternofetal outcomes of pregnancy after bariatric surgery. **Design:** Quasi-experimental design. **Setting:** The study was conducted in Obstetric and Gynecological out-patient clinic at Benha University hospital. **Subjects:** A purposive sample of total 108 of Primigravida women after bariatric surgery “were recruited in the current study, they were allocated into two groups: control group included (54) Primigravida women they had ordinary nursing care. Study group included (54) Primigravida women they had continuous care model. Tools: five tools were used for data collection, A self-administered questionnaire tool, Women’s knowledge questionnaire tool, Health-related behaviors questionnaire, World Health Organization Quality of Life BREF (WHOQOL-BREF) & Maternal and neonatal outcomes questionnaire. Results of the study showed a highly statistically significant differences regarding knowledge and self-care practice between study and control groups regarding self-care of pregnancy after bariatric surgery. **Results:** The study showed a highly statistically significant differences regarding knowledge and self-care practice between study and control groups regarding self-care of pregnancy after bariatric surgery ( $p < 0.000$ ) and there was a statistically difference between two groups regarding maternal and neonatal outcomes including anemia, antepartum hemorrhage, gestational diabetes, and postpartum hemorrhage among mother and between intrauterine growth retardation, low birth weight and the Apgar score at the 5<sup>th</sup> minute among neonates. **Conclusion:** continuous care model had a positive effect on quality of life and maternofetal outcomes. **Recommendation:** Continuous care model should be incorporated as a nursing intervention for all post bariatric surgery pregnant women to promote their health behaviors and improve their quality of life.

**Keywords:** Continuous Care Model, Quality of Life, Maternofetal outcomes, Bariatric Surgery

**Introduction:**

Obesity is a most important cause of morbidity and mortality in the United States and worldwide, that is frequently encountered in clinical practice today and requires a range of medical interventions. While obesity affects both men and women across all ages, multiple issues are particularly germane to women's health, particularly as obesity is more prevalent amongst women than men in the United States and obesity among women of reproductive health relates to the growing issue of childhood obesity. **(Tauqeer, Gomez, & Stanford, 2018)**

Bariatric surgery currently considered the most effective treatment option for morbid obesity; it results in a more significant improvement in weight loss outcomes and obesity-related co-morbidities when compared with nonsurgical interventions. **(Mansour, Abellatif & Yassien, 2019)**

Bariatric procedures are generally safe and effective, but can be associated with devastating complications, some of which may be fatal if not addressed quickly. Surgeries for weight loss include more than one procedures sleeve gastrectomies, Roux-en-Y gastric bypasses, and gastric balloons. Early post operative complications include leaks, stenoses, bleeding, and venous thromboembolic events. These principles also apply to less commonly performed bariatric operations such as the mini-gastric bypass, single anastomosis duodenal ileal bypass, and the duodenal switch, also known as the biliopancreatic diversion with a sleeve gastrectomies. **(Lim, et al, 2018)**

In recent years, the incidence of bariatric surgery has increased among women of reproductive age. Health care providers should be equipped by knowledge about the impact bariatric surgery has on women and developing fetuses to effectively provide care from preconception through postpartum. Although pregnancy in women with normal weight or with excess weight after bariatric surgery has better outcomes when compared to pregnancy complicated by obesity, it is associated with multiple complications such as nutritional deficiencies, low birth weight, and fetal growth restriction. Consequently, a multidisciplinary approach is recommended to ensure adequate nutrition, counseling, and screening before and during pregnancy. **(Lindsay & Bowers, 2021)**

Most women who undergo bariatric surgery lose a significant amount of weight, reverse most of their comorbidities, and enjoy an improved quality of life. However, fewer than one percent of women eligible for bariatric surgery undergo treatment. Furthermore, there exists a considerable gender disparity, with women comprising 80% of those patients who undergo bariatric surgery, despite equal obesity rates across genders. Many obstacles exist between obese patients and weight loss surgery including misconceptions among patients and primary care providers regarding the perceived risk of surgery. This is in

addition to several other psychosocial and cultural factors that may have contributed to and precipitated the existing gender imbalance. **(Aly, Hachey & Pernar, 2020)**

Bariatric surgery proved to be effective in changes in the quality of life of individuals, enhancing self-esteem, self-care, performance in work, leisure and social relationships. Most patients defined QoL as having a healthy life with the possibility of practicing exercises without getting tired easily, being able to feed themselves properly, to perform better at work and to have more active social life. **(Barros, et al, 2019)**

Knowledge about the management of women after bariatric surgery in and around pregnancy is growing but consists mostly of data derived from retrospective studies or derived from few cohort studies and several case reports describing complications. However, there is little evidence in various important fields and aspects around pregnant women who underwent bariatric surgery regarding ideal time of pregnancy after surgery, diagnostic criteria and best ways and methods to identify GDM, diabetes in pregnancy, and treatment goals after diagnosis. **(Aly, Hachey & Pernar, 2020)**

For pregnant women after metabolic surgery, further information on optimal weight gain in pregnancy, potential lack of several nutrients and nutritional intake recommendations in pregnancy and lactation, effects of nutritional deficiencies on fetal development, and long-term consequences in offspring is urgently needed and is of high scientific and clinical interest facing growing surgery numbers in women of reproductive age. Pregnancy after bariatric surgery need to be considered as high-risk pregnancy with many possible problems, which may arise during pregnancy. complications need to be accounted promptly to prevent acute or chronic complications in women with bariatric surgery or their offspring. **(Harreiter, et al., 2018)**

Nurses play a vital role in promoting maternal nutrition are considered the backbone of maternity services. Hence, it is crucial for them to have adequate knowledge regarding the promotion of maternal nutrition to be able to provide effective nutritional services to women during pregnancy **(Saronga et al. 2020)**.

### **Significance of the Study:**

Obesity is a major public health issue in Egypt and its repercussions are not only limited to the health dimension, but also extend to affecting the productive capacity of the citizens. According to the “100 million Seha” initiative, 39.8% of Egyptian adults suffer from obesity. Obesity prevalence can vary according to the geographical location, gender, and socioeconomic class. In addition, obesity is a risk factor for numerous Non-Communicable Diseases (NCD) such as diabetes. **(Sedky, Gaber, Magdy, & El Safoury, 2021)**

According to the World Health Organization (2015) estimated that obesity in Egypt was 74% to 86% in women and 69% to 77% in men. These data indicate a much higher prevalence of obesity among adult women, while overweight is more marked among adult men. According to Ain Shams University Hospital Statistical Department (2015), 500 patients are undergone bariatric surgery this year. However, quality nursing care and effective patient teaching are essential to achieving positive patient outcomes. **(Mansour, Abellatif, & Yassien, 2019)**

Bariatric surgery is one of the most effective and increasingly available treatments for obesity and related comorbidities. This procedure is associated with several complications like bleeding, deep vein thrombosis, splenic injury, pulmonary embolism, hernia, and recurrence of obesity; these complications have a negative impact on the patient's functional status and consequently QoL. so, the present study is conducted to estimate the effects of nursing guidelines on postoperative complications and quality of life in females undergoing bariatric surgeries. Hopefully, these guidelines for bariatric surgery will help in minimizing the post-operative complications and improve the quality of life of these females.

### **Aim of the Study:**

This study aims to evaluate the effect of continuous care model on quality of life and maternofetal outcomes of pregnancy after bariatric surgery.

### **Research Hypotheses:**

**H1:** Primigravida women after bariatric surgery who received continuous care model will exhibit improved knowledge and more engagement in health-related behavior than those who do not receive it.

**H2:** Primigravida women after bariatric surgery who received continuous care model will have proper maternal and neonatal outcomes and better quality of life than those who received ordinary medical and nursing care.

### **Subjects and Method:**

#### **Study Design:**

Quasi-experimental design (pre-posttest, two groups: control and study) will be used to fulfill the aim of the study.

#### **Setting of Study:**

This study will be conducted at Obstetric and Gynecological out-patient clinic at Benha University hospital.

**Sample:**

**Sample Type:** A purposive sample of primigravida women after bariatric surgery.

**Sample Size and Technique:** The Total of sample size is calculated according to Benha University Hospital Statistical Census Center (2021). The flow of rate of primigravida women after bariatric surgery was about 216 women. Thus, 50% of total sample which are (108 women) will be included in the study according to following **Inclusion Criteria:**

- Primigravida women.
- Women who had Roux-en-Y gastric bypass type of bariatric surgery
- Women aged 20-40 years.
- Gestational age between 18-24 weeks.
- Free from medical disorders.
- Free from obstetrical complications as gestational diabetes and eclampsia.
- Free from psychiatric disorders affect perception of QOL.
- Can read and write.

**Exclusion criteria:**

- Reluctance to continue cooperation.
- Previous equivalent intervention.

**Tools of Data Collection:**

The following **five tools** were used for data collection:

**Tool I: A self-administered questionnaire:** It was designed by the researchers based on a review of literature. The questionnaire was divided into **four parts:**

**Part I:** Socio-demographic data: included (5 items) such as (age, level of education, residence, occupation, and income).

**Part II:** Bariatric surgery history: included (3 items) such as (time of surgery, reason for surgery and surgery-to-conception interval).

**Part III:** Obstetrical history included (3 items) such as (history of in vitro fertilization, type of current pregnancy and gestational age).

**Tool II: Women's knowledge questionnaire (pre-posttest):**

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It was designed by the researchers after reviewing related literature (**El-dawoody et al, 2016; Mohamed and Eltohamy., 2019 and Ali, 2019**). It was used to evaluate pregnant women's knowledge regarding bariatric surgery, it included (15) closed ended questions such as (definition of bariatric surgery, types of bariatric surgery, indication, contraindications, effect of bariatric surgery on pregnancy, hazards that affect pregnant women after bariatric surgery, importance of health-related behaviors during pregnancy after bariatric surgery, nutritional requirements, contraindicated foods, food rich in iron, protein, calcium, and vitamins, times of antenatal visits and follow up and required routine investigations).

### **Scoring System:**

All knowledge variables were weighted according to items included in each question. Each item was given a score (2) when the answer was correct answer, a score (1) when the answer will be incorrect answer, or I don't know. The total score was calculated by summation of the scores of its items. **The score of total knowledge was classified as the following:**

- Adequate when the total score is 75% to 100%.
- Inadequate when the total score is less than 75%

### **Tool III: Health-related behaviors questionnaire (pre-posttest):**

It was developed by the researchers after reviewing related literature (Mohamed and Eltohamy., 2019; Via and Nutritional, 2017 and Soliman et al, 2019). It was used to assess women's health-related behaviors regarding self-care practices. It comprised totally (14 items) classified into three main domains including nutritional health care practices (7 items), rest and sleep health practices (4 items) and treatment & follow up health practices (4 items).

### **Scoring System:**

The items will be rated based on a three-point Likert scale; always (score 3), sometimes (score 2), and rarely (score 1). The range of obtained scores was between 14 and 42, with higher scores indicating more engagement in healthy behaviors. **The score of total practices was classified as the following:**

- Satisfactory when the total score is 75% to 100%.
- Unsatisfactory when the total score is less than 75%.

### **Tool IV: World Health Organization Quality of Life - BREF (WHOQOL-BREF) (pre-posttest):**

The WHOQOL-BREF was adapted from (*World Health Organization, 1996*) and translated into Arabic language to assess the perception of the quality of life among women with preeclampsia in the previous two weeks. It consisted of 26 items in four domains: Physical health (7 items), psychological (6 items), social relationships (3 items) and environment (8 items) as well as (2 items) on overall QOL and general health.

### **Scoring system:**

On a five-point Likert scale ranging from 1 to 5, each item of WHOQOL-BREF is scored (1 for the lowest and 5 for the highest agreements with the item). The domain score is calculated using items scores within each domain. The mean score of each item will be calculated. Higher scores reflect a better quality of life. **The score of total QOL will be classified as the following:**

- High: (> 75 % correct answer).
- Moderate: ( $50 \leq 75$  % correct answer).
- Low: (< 50 % correct answer).

### **Tool V: Maternal and neonatal outcomes questionnaire:**

**Part I: Maternal outcomes measurements questionnaire** was developed by the researchers to evaluate maternal outcomes including (antepartum outcomes, intrapartum outcomes, postpartum outcomes, and anxiety level). For assessment of anxiety level, a visual analogue scale (VAS-A) was used. Women were instructed to choose a number from 0 to 10 that best describes their anxiety. 0 would mean ‘No anxiety’ and 10 would mean severe anxiety. It was scored as no anxiety (0), mild anxiety (1-3), moderate anxiety (4-7), and severe anxiety (8-10) (**Hernández-Palazón et al, 2015**).

**Part II: Neonatal outcomes measurements questionnaire** was developed by the researchers to evaluate neonatal outcomes including (intrauterine growth retardation, intrapartum fetal distress, low birth weight, week of gestation at the delivery (weeks) Apgar score (at 1st and 5th minutes), neonatal admission to the neonatal intensive care unit (NICU) and neonatal sex). Apgar score scoring system was identified as good (8-10 score), Moderate asphyxia (5-7), and severe asphyxia (0-4).”

### **Tools Validity and Reliability:**

Tools of data collection were revised by three experts in obstetrics and gynecological nursing to examine the content validity. The tools were judged for clarity of questions and appropriateness of the content. Minor modifications were made based on experts’

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suggestions in formulating some items. From the experts' perspective, the tools were considered valid.

The reliability of tools of the current work was assessed using Cronbach's alpha coefficient. Internal consistency for knowledge questionnaire was 0.87, health-related behaviors questionnaire internal consistency was 0.84, for maternal outcomes measurements questionnaire was 0.79, for maternal outcomes measurements questionnaire was 0.81 and WHOQOL-BREF internal consistency ranged from 0.66 to 0.84 for the four domains, and from 0.86 to 0.91 for the total score (*WHOQOL Group, 1998*).

### **Ethical Consideration:**

Ethical aspects will be considered before starting the study as the following: Approval of the faculty ethics committee for scientific research will be obtained for the fulfillment of the study. An official permission from the selected study settings will be obtained for the fulfillment of the study. Before applying the tools, the researcher will explain the aim and importance of the study to gain women's confidence and trust. The researcher will take oral consent from women to participate in the study and confidentiality will be assured. The study will not have any physical, social, or psychological risks on the women. The data will be collected and treated confidentially. The women will be free to withdraw from study at any time.

### **Pilot Study:**

The pilot study was carried out on ten percent of the total sample (11 women) to assess clarity, simplicity, relevancy, and applicability of the tools. In addition, to detect any possible obstacles and problems peculiar during data collection, to detect any problems peculiar to the statements as sequence of questions, and the time required for data collection was estimated. There were no modifications made, and women in the pilot study were excluded in the main sample size.

### **Procedure:**

Upon obtaining formal approval from the director of Benha University Hospital for conducting this study, the researchers visited the previously mentioned setting three days a week from 9.00 am to 1.00 pm until predetermined sample size was completed. Each woman recruited for the study was interviewed individually; on average, 3-4 women were interviewed per week. This study lasted nine months, from the beginning of May 2021 to the end of January 2022.



For the study group, the continuous care model was implemented in four stages: Orientation, sensitization, control, and evaluation.

### **Orientation stage:**

It was the first step in which the researchers introduced themselves, clarified the study aim and expectations, explained the various stages of the model to the woman, created motivation, and elucidated the importance of continuing care contact between the researchers and the studied women, explained the ways of communication and identified the required phone calls schedules until the end of the intervention. At this stage, consent forms were signed from women to participate in the study, and five data collection tools were filled out to collect baseline data. Five tools were completed in about 25-30 minutes.

- Data was collected by the researchers through the distribution of a self-administered questionnaire to assess women's socio-demographic data, current obstetric history, and bariatric surgery history.
- After that, the researcher distributed women's knowledge questionnaire (Pretest) to assess knowledge regarding bariatric surgery.
- Then, the researcher distributed health-related behaviors questionnaire (Pretest) to assess primigravida women's practices after bariatric.
- Then, the researcher will distribute quality of life questionnaire (Pretest) to assess the perception of the quality of life among primigravida women after bariatric surgery.
- Finally, at the of orientation stage, the researcher collected these questionnaires from women.

### **Sensitization Stage:**

It was performed to engage the primigravida women with bariatric surgery continuous care process. Each woman attended four educational sessions (two sessions weekly); every session lasted about 30 to 45 minutes in the separate room at the pre-mentioned setting using discussion, question and answer, role-playing, PowerPoint presentations, and video teaching. Feedback from the previous session was taken at the beginning of the new one, accordingly, the addressed educational content was re-discussed with full clarification.

**First session:** The researchers intended to provide an overview of bariatric surgery, including: definition of bariatric surgery, types, indication, contraindications, effect of bariatric surgery on pregnancy, hazards that affect pregnant women after bariatric surgery and required routine investigations.

**Second session:** The researchers taught women about the necessity of engaging in health-related behaviors during pregnancy after bariatric surgery to manage the gestational

period in a healthy manner, including the importance of such health-related behaviors as nutritional health practices, rest and sleep health practices and follow up and treatment.

**Third session:** The researcher discussed dietary management to as intake of adequate food, intake of small frequent diet, contraindicated food, food rich in protein, vitamin A, E, D, K and B, iron, calcium

**Fourth session:** The researcher explained the importance of commitment to recommended antenatal visits. The importance of stress reduction and techniques to overcome pregnancy-related stress. Also, the concept of quality of life and the relation between compliance with health-related behaviors and improved quality of life. Educational booklets were provided to the studied women at the end of this session.

### **Control Stage:**

During this stage, mutual relationships between researchers and the studied women were maintained through weekly phone calls for each woman (8 calls) throughout two months, according to the women's preferred time for making phone calls (morning or afternoon). Each woman's weekly phone call lasted approximately 10 minutes and varied depending on a woman's educational needs and questions to help women for strengthening and internalizing healthy behaviors. Also, any new educational needs or health problems were identified, addressed, and resolved.

### **Evaluation Stage:**

This phase was done for both study and control groups. This phase was firstly **done after one month** to evaluate the effect of continuous care model implementation using the same tools which were used in pre-intervention phase (as pretest): knowledge questionnaire (tool II), health-related behaviors questionnaire (tool III), WHOQOL-BREF (tool IV). While the maternal and neonatal outcomes measurements were evaluated through **follow-up after delivery** for all women in study and control group. In the case of difficulty communicating with the women due to their absence from antenatal visits, they were contacted via phone

**For the control group**, received hospital routine care. The evaluation started first with the control group to avoid bias.

### **Statistical design:**

The data collected will be organized, coded, computerized, and analyzed by using appropriate statistical methods and tests. Then results will be presented in suitable tables and figures.

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**Data analysis:** Data of current study were analyzed using Statistical Package for Social Science (SPSS version 25) software. Descriptive statistics were used [frequency, percentage, mean, and standard deviation (SD)]. Inferential statistics were used (chi-square or Fisher's exact test for qualitative variables, and independent t-test for quantitative variables). Pearson's correlation coefficient test was used. A statistically significant difference was considered at a p-value  $\leq 0.05$ , a highly statistically significant difference was considered at a p-value  $\leq 0.001$ .

## Results

**Table (1) Distribution of the studied sample (control and study group) according to their socio-demographic data (n=108).**

Group Socio-demographic data	Control group n=54		Study group n=54		X <sup>2</sup>	p-value
	No	%	No	%		
<b>Age</b>						
<25	10	18.5	7	13.0	1.45	0.484
25-	13	24.1	10	18.5		
$\geq 35$	31	57.4	37	68.5		
<b>Mean <math>\pm</math>SD</b>	26.80 $\pm$ 3.43		27.18 $\pm$ 1.63			
<b>Residence</b>						
Rural	28	51.9	35	64.8	1.86	0.127
Urban	26	48.1	19	35.2		
<b>Educational level</b>						
Read and write	8	14.8	10	18.5	0.476	0.924
Basic education	10	18.5	10	18.5		
Secondary	22	40.8	19	35.2		
University	14	25.9	15	27.8		
<b>Employment</b>						
Working	18	33.3	21	38.9	0.361	0.548
Not working	36	66.7	33	61.1		
<b>Income</b>						
Sufficient	5	9.2	9	16.6	1.32	0.516
Fairly sufficient	30	55.6	28	51.9		
Insufficient	19	35.2	17	31.5		

\*A Statistically significant  $p \leq 0.05$

Table (1) shows that, (68.5% and 57.4%) of both study and control groups respectively were aged  $\geq 35$  years old with a mean age of  $27.18 \pm 1.63$  years and  $26.80 \pm 3.43$  years respectively. As regards the residence, (64.8%) of the study group and (51.9%) of control group were lived in rural area. Furthermore, educational level of (35.2%) and (40.8%) of both study and control groups respectively were secondary education. Regarding the employment, (61.1% and 66.7%) of both study and control groups respectively weren't work. As far as monthly income, more half of both the study and control groups (51.9% and 55.6% respectively) had fairly income. No statistically difference was detected among both groups related to socio-demographic data, which mean that the two groups under study were homogenous.

**Table (2): Distribution of the studied sample (control and study group) according to their bariatric surgery history (n=108).**

Bariatric surgery history	Control group n=54		Study group n=54		X <sup>2</sup>	p-value
	No	%	No	%		
<b>Time of surgery</b>						
<18 months	4	7.4	2	3.7	1.32	0.724
18- < 24 months	9	16.7	11	20.4		
24-30 months	26	48.1	23	42.6		
> 30 months	15	27.8	18	33.3		
<b>Reason for surgery</b>						
Body image	12	22.2	4	7.4	5.30	0.071
Decreasing complication of obesity	3	5.6	6	11.1		
Increasing fertility chances	39	72.2	44	81.5		
<b>Surgery-to-conception interval</b>						
12 - <18months	40	74.1	38	70.4	0.185	0.667
18 - <24	14	25.9	16	29.6		

\*A Statistically significant  $p \leq 0.05$

Table (2) illustrates that, reveals that (42.6% and 48.1%) of studied women in study and control groups had a bariatric surgery from (24-30) months ago, respectively. In addition, (81.5% and 72.2%) of studied women in both study and control groups had a bariatric surgery for the purpose of increasing fertility chances, respectively. Regarding surgery-to-conception interval, nearly less than three-quarters (70.4% and 74.1%) in study

and control groups were pregnant after (12 - <18months) months after had a bariatric surgery, respectively. No statistically difference was detected between both groups related to bariatric surgery history, which mean that the two groups under study are homogenous.

**Table (3): Distribution of the studied sample (control and study group) according to their obstetrical history (n=108).**

Obstetrical history	Control group n=54		Study group n=54		X2	p-value
	No	%	No	%		
<b>History of in vitro fertilization</b>						
Yes	15	27.8	20	37.0	1.05	0.304
No	39	72.2	34	63.0		
<b>Type of current pregnancy</b>						
Spontaneous	51	94.4	49	90.7	0.135	0.696
By in vitro fertilization	3	5.6	5	9.3		
<b>Gestational age</b>						
<b>Mean <math>\pm</math>SD</b>	22.00 $\pm$ 1.91		21.19 $\pm$ 1.84		t=2.25	0.737

\*A Statistically significant  $p \leq 0.05$

Table (3) illustrates that, the mean gestational age of the study and control groups was  $21.19 \pm 1.84$  and  $22.00 \pm 1.91$  weeks. Moreover, (37.0% and 27.8%) of the studied women in both study and control group had a history of in vitro fertilization (IVF), respectively. In relation to type of current pregnancy, the majority of women in both groups had spontaneous pregnancy.

**Table (4): Distribution of the studied sample according to their knowledge regarding bariatric surgery in both study and control groups before and after intervention (n=108).**

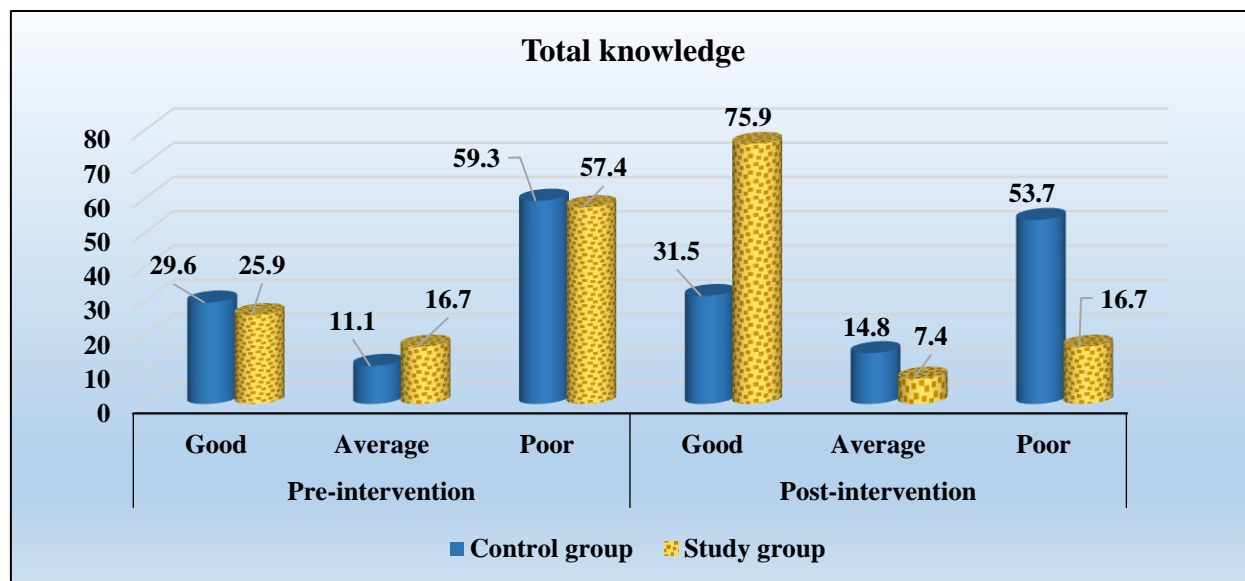
Knowledge items	Before Intervention					After Intervention						
	Control group n=54		Study group n=54		X2	p-value	Control group n=54		Study group n=54		X2	p-value
	No	%	No	%			No	%	No	%		
<b>Definition of bariatric surgery</b>												
Correct answer	23	42.6	20	37.0	0.348	0.555	24	44.4	48	88.9	26.41	0.000**
Incorrect answer	31	57.4	34	63.0			30	55.6	6	11.1		

Knowledge items	Before Intervention					After Intervention						
	Control group n=54		Study group n=54		X2	p-value	Control group n=54		Study group n=54		X2	p-value
	No	%	No	%			No	%	No	%		
<b>Types of bariatric surgery</b>												
Correct answer	19	35.2	22	40.7	0.354	<b>0.552</b>	21	38.9	37	68.5	9.53	<b>0.002*</b>
Incorrect answer	35	64.8	32	59.3			33	61.1	17	31.5		
<b>Indications of bariatric surgery</b>												
Correct answer	11	20.4	9	16.7	0.245	<b>0.620</b>	11	20.4	29	53.7	12.86	<b>0.000**</b>
Incorrect answer	43	79.6	45	83.3			43	79.6	25	46.3		
<b>Contraindications of bariatric surgery</b>												
Correct answer	8	14.8	9	16.7	0.070	<b>0.792</b>	9	16.7	27	50.0	13.50	<b>0.000**</b>
Incorrect answer	46	85.2	45	83.3			45	83.3	27	50.0		
<b>Effect of bariatric surgery on pregnancy</b>												
Correct answer	25	46.3	21	38.9	0.606	<b>0.436</b>	27	50.0	50	92.6	23.93	<b>0.000**</b>
Incorrect answer	29	53.7	33	61.1			27	50.0	4	7.4		
<b>Hazards that affect pregnant women after bariatric surgery</b>												
Correct answer	18	33.3	15	27.8	0.393	<b>0.531</b>	19	35.2	47	87.0	30.54	<b>0.000**</b>
Incorrect answer	36	66.7	39	72.2			35	64.8	7	13.0		
<b>Importance of health-related behaviors during pregnancy after bariatric surgery</b>												
Correct answer	24	44.4	25	46.3	0.037	<b>0.847</b>	26	48.1	52	96.3	31.20	<b>0.000**</b>
Incorrect answer	30	55.6	29	53.7			28	51.9	2	3.7		
<b>Nutritional requirements</b>												
Correct answer	23	42.6	21	38.9	0.153	<b>0.695</b>	25	46.3	44	81.5	14.48	<b>0.000**</b>
Incorrect answer	31	57.4	33	61.1			29	53.7	10	18.5		
<b>Contraindicated foods</b>												
Correct answer	16	29.6	19	35.2	0.380	<b>0.537</b>	19	19	54	100.0	51.78	<b>0.000**</b>
Incorrect answer	38	70.4	35	64.8			35	35	0	0.0		

Knowledge items	Before Intervention					After Intervention						
	Control group n=54		Study group n=54		X2	p-value	Control group n=54		Study group n=54		X2	p-value
	No	%	No	%			No	%	No	%		
<b>Food rich in iron</b>												
Correct answer	26	48.1	24	44.4	0.149	<b>0.700</b>	26	48.1	46	85.2	16.66	<b>0.000**</b>
Incorrect answer	28	51.9	30	55.6			28	51.9	8	14.8		
<b>Food rich in protein</b>												
Correct answer	31	57.4	29	53.7	0.150	<b>0.699</b>	33	61.1	48	88.9	11.11	<b>0.001**</b>
Incorrect answer	23	42.6	25	46.3			21	38.9	6	11.1		
<b>Food rich in calcium</b>												
Correct answer	33	61.1	35	64.8	0.159	0.690	34	63.0	53	98.1	21.34	<b>0.000**</b>
Incorrect answer	21	38.9	19	35.2			20	37.0	1	1.9		
<b>Food rich in vitamins</b>												
Correct answer	27	50.0	29	53.7	0.148	<b>0.700</b>	27	50.0	45	83.3	13.50	<b>0.000**</b>
Incorrect answer	27	50.0	25	46.3			27	50.0	9	16.7		
<b>Times of antenatal visits and follow up</b>												
Correct answer	14	25.9	13	24.1	0.049	<b>0.824</b>	18	33.3	43	79.6	23.54	<b>0.000**</b>
Incorrect answer	40	74.1	41	75.9			36	66.7	11	20.4		
<b>Required routine investigations</b>												
Correct answer	17	31.5	20	37.0	0.370	0.543	20	37.0	42	77.8	18.32	<b>0.000**</b>
Incorrect answer	37	68.5	34	63.0			34	63.0	12	22.2		

\*A Statistically significant  $p \leq 0.05$ \*\*A Highly Statistical significant  $p \leq 0.001$ 

Table (4) indicates that, there was no statistically significant difference between studied women between both study and control groups regarding their knowledge about bariatric surgery and pregnancy after it before implementation of the continuous care model ( $P > 0.05$ ). On the other hand, there was a highly statistically significant difference between both groups regarding their knowledge after implementation of the continuous care model ( $P < 0.001$ ), as the study group women had a higher percentage of knowledge score than these in control group.



**Figure (1): Distribution of the studied sample total knowledge regarding bariatric surgery and pregnancy after it in both study and control groups before and after intervention (n =108).**

Fig. (1) displays that, (25.9%) of study group and (29.6%) of control group had good knowledge regarding bariatric surgery and pregnancy after it before implementation of the continuous care model. Meanwhile, after implementation of continuous care model, (75.9%) of study group had good knowledge compared with (31.5%) of the control group.



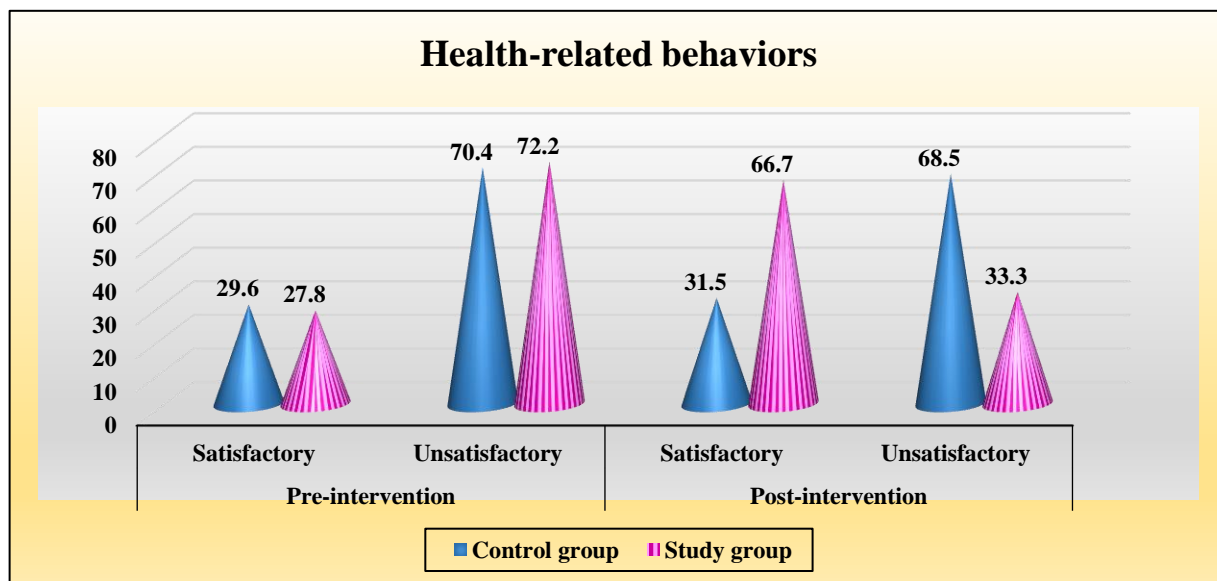
**Table (5): Distribution of the studied sample according to their health-related behaviors regarding bariatric surgery in both study and control groups before and after intervention (n=108).**

Health-related behaviors		Control group n=54						Study group n=54						X2	P-value
		Always		Sometimes		Rarely		Always		Sometimes		Rarely			
		No	%	No	%	No	%	No	%	No	%	No	%		
<b>Nutritional health care practices</b>															
Intake of adequate food	<b>Before intervention</b>	12	22.2	15	27.8	27	50.0	14	25.9	14	25.9	26	48.1	0.207	<b>0.902</b>
	<b>After intervention</b>	11	20.4	14	25.9	29	53.7	39	72.2	12	22.2	3	5.6	36.95	<b>0.000**</b>
Intake of small frequent diet	<b>Before intervention</b>	20	37.0	9	16.7	25	46.3	19	35.2	13	24.1	22	40.7	0.944	<b>0.624</b>
	<b>After intervention</b>	21	38.9	10	18.5	23	42.6	41	75.9	9	16.7	4	7.4	19.87	<b>0.000**</b>
Avoid intake of spicy, chocolate and coffee	<b>Before intervention</b>	12	22.2	24	44.4	18	33.3	16	29.6	20	37.0	18	33.3	0.935	<b>0.627</b>
	<b>After intervention</b>	12	22.2	22	40.7	20	37.0	38	70.4	14	25.9	2	3.7	30.02	<b>0.000**</b>
Intake of food rich in protein	<b>Before intervention</b>	23	42.6	11	20.4	20	37.0	21	38.9	13	24.1	20	37.0	0.258	<b>0.879</b>
	<b>After intervention</b>	23	42.6	11	20.4	20	37.0	45	83.3	3	5.6	6	11.1	19.22	<b>0.000**</b>
Intake of food rich in iron	<b>Before intervention</b>	16	29.6	25	46.3	13	24.1	19	35.2	21	38.9	14	25.9	0.624	<b>0.725</b>
	<b>After intervention</b>	15	27.8	26	48.1	13	24.1	37	68.5	11	20.4	6	11.1	17.96	<b>0.000**</b>
Intake of food rich in calcium	<b>Before intervention</b>	22	40.7	10	18.5	22	40.7	18	33.3	11	20.4	25	46.3	0.639	<b>0.726</b>
	<b>After intervention</b>	19	35.2	13	24.1	22	40.7	35	64.8	3	5.6	16	29.6	11.93	<b>0.003*</b>
Intake of food rich in vitamin A, E,D,K and B	<b>Before intervention</b>	17	31.5	17	31.5	20	37.0	20	37.0	12	22.2	22	40.7	4.000	<b>0.135</b>
	<b>After intervention</b>	18	33.3	17	31.5	19	35.2	36	66.7	14	25.9	4	7.4	17.59	<b>0.000**</b>
<b>Rest and sleep health practices</b>															
Have adequate sleep hours	<b>Before intervention</b>	26	48.1	18	33.3	10	18.5	24	44.4	20	37.0	10	18.5	0.371	<b>0.831</b>
	<b>After intervention</b>	27	50.0	17	31.5	10	18.5	40	74.1	6	11.1	8	14.8	7.542	<b>0.023*</b>

Health-related behaviors		Control group n=54						Study group n=54						X2	P-value
		Always		Sometimes		Rarely		Always		Sometimes		Rarely			
		No	%	No	%	No	%	No	%	No	%	No	%		
Have adequate rest	Before intervention	24	44.4	14	25.9	16	29.6	26	48.1	12	22.2	18	33.3	0.234	<b>0.890</b>
	After intervention	26	48.1	15	27.8	13	24.1	44	81.5	0	0.0	10	18.5	20.02	<b>0.000**</b>
Avoid excessive activity	Before intervention	16	29.6	15	27.8	23	42.6	19	35.2	19	35.2	16	29.6	1.984	<b>0.371</b>
	After intervention	15	27.8	14	25.9	25	46.3	38	70.4	2	3.7	14	25.9	22.08	<b>0.000**</b>
Avoid stressful situations	Before intervention	12	22.2	13	24.1	39	72.2	10	18.5	18	33.3	26	48.1	1.152	<b>0.562</b>
	After intervention	14	25.9	10	18.5	30	55.6	29	53.7	12	22.2	13	24.1	12.13	<b>0.002*</b>
<b>Treatment &amp; follow up health practices</b>															
Attendance of regular antenatal visits	Before intervention	16	29.6	14	25.9	24	44.4	19	35.2	11	20.4	24	44.4	0.617	<b>0.734</b>
	After intervention	17	31.5	11	20.4	26	48.1	33	61.1	12	22.2	9	16.7	13.42	<b>0.001**</b>
Seeking medical care when having any risk during pregnancy	Before intervention	34	63.0	13	24.1	17	31.5	29	53.7	15	27.8	10	18.5	1.069	<b>0.586</b>
	After intervention	30	55.6	10	18.5	14	25.9	44	81.5	10	18.5	0	0.0	16.64	<b>0.000**</b>
Compliance with prescribed supplementation	Before intervention	28	51.9	13	24.1	13	24.1	26	48.1	10	18.5	18	33.3	1.272	<b>0.529</b>
	After intervention	28	51.9	13	24.1	13	24.1	47	87.0	5	9.3	2	3.7	16.43	<b>0.000**</b>

\*A Statistically significant  $p \leq 0.05$ \*\*A Highly Statistically significant  $p \leq 0.001$ 

Table (5) illustrates that, there was no statistically significant difference between the study and control groups concerning all items of health-related behaviors regarding self-care practices before implementation of the continuous care model ( $p > 0.05$ ). However, a statistically significant improvement was observed in the study group compared with the control group after implementation of the continuous care model ( $p \leq 0.001$  and  $p \leq 0.05$ ), as the study group women had a higher percentage of practices score than these in control group.



**Figure (2): Distribution of the studied sample total health-related behaviors regarding bariatric surgery and pregnancy after it in both study and control groups before and after intervention (n =108).**

Fig. (2) reveals that, (27.8%) of study group and (29.6%) of control group had satisfactory level of health-related behaviors regarding bariatric surgery and pregnancy after it before implementation of the continuous care model. Meanwhile, after implementation of continuous care model, (66.7%) of study group had unsatisfactory level of health-related behaviors compared with (31.5%) of the control group.

**Table (6): Total mean cores of quality-of-life domains of studied sample after bariatric surgery in both study and control groups before and after intervention (n=108).**

Quality of life domains		Maximum score	Control group n=54	Study group n=54	Independent t-test	P-value
			Mean $\pm$ SD	Mean $\pm$ SD		
Physical health	Before intervention	35	14.88 $\pm$ 3.90	15.44 $\pm$ 3.64	0.947	<b>0.346</b>
	After intervention		14.18 $\pm$ 3.81	21.70 $\pm$ 6.10	6.465	<b>0.000**</b>
Psychological health	Before intervention	30	14.20 $\pm$ 1.90	14.51 $\pm$ 1.73	1.324	<b>0.188</b>
	After intervention		13.66 $\pm$ 2.29	17.94 $\pm$ 4.42	5.299	<b>0.000**</b>
Social relationships	Before intervention	15	8.22 $\pm$ 1.98	8.62 $\pm$ 2.05	0.886	<b>0.377</b>
	After intervention		8.55 $\pm$ 1.91	11.70 $\pm$ 1.88	8.084	<b>0.000**</b>
Environmental health	Before intervention	40	16.83 $\pm$ 3.82	17.79 $\pm$ 2.89	0.668	<b>0.505</b>
	After intervention		17.29 $\pm$ 3.36	22.62 $\pm$ 5.59	5.638	<b>0.000**</b>
Overall quality of life and general health	Before intervention	10	4.48 $\pm$ 1.05	5.16 $\pm$ 1.55	0.751	<b>0.455</b>
	After intervention		4.33 $\pm$ 0.99	6.55 $\pm$ 1.82	4.256	<b>0.000**</b>
Total score	Before intervention	130	58.62 $\pm$ 6.28	61.55 $\pm$ 4.88	0.480	<b>0.632</b>
	After intervention		58.03 $\pm$ 6.53	80.53 $\pm$ 15.13	8.76	<b>0.000**</b>

Table (6) elaborates that, before implementation of the continuous care model, the mean scores of total qualities of life showed the impaired quality of life in the study and control groups (61.55 $\pm$ 4.88 and 58.62 $\pm$ 6.28) respectively, with no statistically significant difference ( $P>0.05$ ). However, after implementation of the continuous care model, the mean difference score for total quality of life in the study group was higher than the score in the control group (80.53 $\pm$ 15.13 versus 58.03 $\pm$ 6.53) respectively with a highly statistically significant difference ( $P\leq 0.001$ ). Such significant differences also existed in all domains of quality of life, including physical health, psychological, social relationships, and

environment, as well as two items concerning the overall quality of life and general health ( $p \leq 0.001$ ).

**Table (7): Distribution of the studied sample regarding their maternal outcomes in both study and control groups before and after intervention (n=108).**

Maternal outcomes		Control group n=54		Study group n=54		X2	P-value
		No	%	No	%		
<b>Antepartum outcomes:</b>							
Anemia	<b>Yes</b>	24	44.4	14	25.9	4.06	<b>0.044*</b>
	<b>No</b>	30	55.6	40	74.1		
Antepartum bleeding	<b>Yes</b>	13	24.1	4	7.4	5.65	<b>0.017*</b>
	<b>No</b>	41	75.9	50	92.6		
Preterm labor	<b>Yes</b>	3	5.6	1	1.9	1.03	<b>0.308</b>
	<b>No</b>	51	94.4	53	98.1		
Gestational diabetes	<b>Yes</b>	10	18.5	3	5.6	4.28	<b>0.038*</b>
	<b>No</b>	44	81.5	51	94.4		
Preeclampsia	<b>Yes</b>	2	3.7	1	1.9	0.343	<b>0.558</b>
	<b>No</b>	52	96.3	53	98.1		
Anxiety and stress	<b>Mild</b>	21	38.9	40	74.1	14.37	<b>0.001**</b>
	<b>Moderate</b>	24	44.4	12	22.2		
	<b>Severe</b>	9	16.7	2	3.7		
<b>Intrapartum outcomes:</b>							
Mode of delivery	<b>Vaginal delivery</b>	21		18		0.361	<b>0.548</b>
	<b>Cesarean section</b>	33		36			
<b>Postpartum outcomes:</b>							
Postpartum hemorrhage	<b>Yes</b>	3		12		6.27	<b>0.012*</b>
	<b>No</b>	51		42			

\*A Statistically significant  $p \leq 0.05$  \*\*A Highly Statistically significant  $p \leq 0.001$

Table (7) indicates that, there was a statistically significant difference between maternal outcomes regarding anemia, antepartum hemorrhage, gestational diabetes, and postpartum hemorrhage. Furthermore, there was a highly statistically significant difference between levels of anxiety, as (74.1%) and (38.9%) of women in study and control groups had a low level of anxiety, respectively. On the other side, there was no

statistically significant difference between study and control group regarding preterm labor, preeclampsia, and mode of delivery.

**Table (8): Distribution of the studied sample regarding their neonatal outcomes in both study and control groups before and after intervention (n=108).**

Neonatal outcomes		Control group n=54		Study group n=54		X2	P-value
		No	%	No	%		
<b>Antepartum outcomes:</b>							
Intrauterine growth retardation	Yes	11	20.4	3	5.6	5.25	<b>0.022*</b>
	No	43	79.6	51	94.4		
Intrapartum fetal distress	Yes	4	7.4	2	3.7	7.05	<b>0.401</b>
	No	50	92.6	52	96.3		
Low birth weight	Yes	13	24.1	5	9.3	4.26	<b>0.039*</b>
	No	41	75.9	49	90.7		
Apgar score at 1 <sup>st</sup> minute	<b>Good (8-10)</b>	30	55.6	38	70.4	3.52	<b>0.172</b>
	<b>Moderate asphyxia (5-7)</b>	16	29.6	13	24.1		
	<b>Sever asphyxia (<math>\leq 4</math>)</b>	8	14.8	3	5.6		
Apgar score at 5 <sup>th</sup> minute	<b>Good (8-10)</b>	39	72.2	50	92.6	7.94	<b>0.019*</b>
	<b>Moderate asphyxia (5-7)</b>	13	24.1	3	5.6		
	<b>Sever asphyxia (<math>\leq 4</math>)</b>	2	3.7	1	1.9		
Admission to neonatal intensive care	Yes	9	16.7	7	13.0	0.239	<b>0.588</b>
	No	45	83.3	47	87.0		
Neonatal sex	Male	30	55.6	22	40.7	2.37	<b>0.123</b>
	Female	24	44.4	32	59.3		

\*A Statistically significant  $p \leq 0.05$

\*\*A Highly Statistically significant  $p \leq 0.001$

Table (8) illustrates that, there was a statistically significant difference between neonatal outcomes between newborn in both study and control groups regarding intrauterine growth retardation, low birth weight and the Apgar score at the 5th minute. On the other hand, there

was no statistically significant difference between study and control group regarding intrapartum fetal distress and admission to neonatal intensive care unit.”

### **Discussion:**

Although bariatric surgery has a positive effect on pregnancy outcome, the procedures might be associated with adverse outcomes as well, for example micronutrient deficiencies, iron or B12 deficiency anemia, dumping syndrome, surgical complications such as internal hernias, and small for gestational age (SGA) offspring, possibly due to maternal malnutrition. Maternity nurses have a critical role in improving women’s knowledge and practice toward healthy nutritional practice and play a vital role to avoid risks of malnutrition and complication associated with pregnancy after bariatric surgery. The result of the present study supported the stated hypothesis that Primigravida women after bariatric surgery who received continuous care model exhibit improved knowledge and more engagement in health-related behavior and have proper maternal and neonatal outcomes and better quality of life.

As regarding personnel characteristics of the studied women, the present study finding indicated that there was no statistically significant difference between personnel characteristics of the studied women in both study and control groups. In addition, more than half of women in both groups age more than 35 years. These findings are in accordance with **Soliman et al., (2019)**, entitled “Effect of Nutritional Education Intervention on Knowledge, Attitude and Practice of Pregnant Women towards Dietary habits, Physical activity and Optimal Gestational Weight Gain”, who indicated that the age of studied pregnant women was ranged from 18-35 years old, in the study to “the effect of the nutritional health education program on changing knowledge and attitude towards nutrition of mothers during pregnancy and to identify its role on gaining optimal weight.”

Concerning obstetric history of the studied women in both study and control group, the present study revealed that 81.5% of studied women in both study and control groups had a bariatric surgery for the purpose of increasing fertility chances and nearly less than three-quarters in studied groups were pregnant after (12 - <18months) months after had a bariatric surgery these finding supported by **Mohamed & Eltohamy, (2019)**. Entitled “Effectiveness of Self - Care Instructional Guideline on Maternal and Neonatal Outcomes Among Pregnant Women After Bariatric Surgery.” Who reported that two third of studied women in both study and control group had a bariatric surgery for the purpose of enhancing the fertilization, moreover, nearly more than half were pregnant after (12-18) months after had a bariatric surgery.

The present study findings also added that most of the studied women in both study and control groups had spontaneous pregnancy after bariatric surgery. Moreover, more than quarter of the studied women had a history of in vitro fertilization. This finding supported by **Akhter, et al, (2021)**, entitled “Pregnancy after Bariatric Surgery: A Nested Case-Control Study of Risk Factors for Small for Gestational Age Babies in AURORA”, who reported that, All the SGA babies were conceived spontaneously whereas 14.4% of the AGA babies were conceived through fertility treatment, in contrast to what is expected, as fertility treatment is associated with low birth weight.

Regarding to the effect of implementation of the continuous care model, there was a highly statistically significant difference between both groups regarding their knowledge after implementation of the continuous care model, as the study group women had a highly improvement of knowledge level than these in control group. This finding is in accordance with **Ali, (2019)** entitled “Effects of Nursing Guidelines on Postoperative Complications and Quality of Life in Patients Undergoing Bariatric Surgeries” who indicated that the majority of the sample in study and control groups had low level of knowledge pre-implementing of the nursing guidelines; while there was a significant improvement in the level of knowledge in the study group post-applied of nursing guidelines as compared to the control group and the initial assessment in study group.

Concerning the health-related behavior after implementation of the continuous care model, there was a highly statistically significant improvement in women practices observed in the study group compared with the control group after implementation of the continuous care model ( $p \leq 0.001$  and  $p \leq 0.05$ ), as the study group women had a higher percentage of practices score than these in control group. This finding supported by **Diddana, et al, (2018)** who specified that providing nutrition education based on Health Belief Model improves nutritional knowledge and dietary practices of pregnant women in which the mean pre- and post-intervention nutritional knowledge was 6.9 and 13.4, and good dietary practice was 56.5% and 84.1% in intervention group, respectively. The increase in mean nutritional knowledge was statistically significant ( $P < 0.001$ ). In control group, the pre- and post-intervention mean nutritional knowledge was 7.4 and 9.8, and good dietary practice was 60.9% and 72.5%, respectively. There was significant difference ( $P < 0.05$ ) in mean nutritional knowledge and proportion of good dietary practices between two groups at endline, but the difference was not significant ( $P > 0.05$ ) at baseline.

Regarding to post bariatric quality of life, the present study stated that there is a significant difference existed in all domains of quality of life, including physical health, psychological, social relationships, and environment, as well as two items concerning the overall quality of life and general health ( $p \leq 0.001$ ). this finding supported by **Major, et**



**al, (2020)** entitled “Quality of Life 10 Years After Bariatric Surgery” who stated that a large improvement of QoL 1 year after bariatric surgery in physical as well as in mental aspects, which seem to be consistent with previously published research and the finding supported also **by Mohamed and Bahgat, (2019)**. Who mentioned that improving the level of knowledge in patients had a significant impact on reducing or preventing postoperative complications, improving the quality of life, as well as improving health status.

Concerning maternal outcomes after bariatric surgery, the present study shown that there statistically significant difference between maternal outcomes regarding anemia, antepartum hemorrhage, gestational diabetes, and postpartum hemorrhage. This finding supported by **Alamri & Abdeen, (2022)** entitled “Maternal Nutritional Status and Pregnancy Outcomes Post-bariatric Surgery”, who reported that bariatric surgery has a different effect on nutritional absorption, causing some nutritional deficiencies affecting perinatal outcomes and post bariatric pregnant women are more susceptible to developing anemia due to the increased demand and inadequate intake.

Concerning gestational diabetes as one of a maternal-outcome among the studied women, the present study findings revealed that there was a significant difference between studied women in both study and control group ( $p < 0.05$ ) as percentage of gestational diabetes was higher among women in control group than women in study group. These findings may be due to continuous care model which help women in the study group to manage dietary intake and avoid excessive intake of carbohydrates and improve the health-related behaviors.

As regarding to level of anxiety among studied women in both study and control group, the present study findings revealed that there was a highly statistically significant difference. These findings are agreed with **Jans et al., (2018)**; who concluded that Pregnancy following bariatric surgery induces high levels of anxiety, as women may be anxious about the fetus delivery and about the effect of pregnancy on bariatric surgery. On the other hand, the vast majority of women in study group had a low level of anxiety. These findings may be because of continuous care model on reducing level of anxiety level, as help it enable self-care practice that subsequently reduce anxiety and mange any upgrading health hazards and help women to enable to make decision regarding delivery.

As regarded to neonatal outcomes of pregnant women post bariatric surgery, the present study findings revealed that there was a statistically significant difference between neonatal outcomes between newborn in both study and control groups regarding intrauterine growth retardation, low birth weight and the Apgar score at the 5th minute. On the other hand, there was no statistically significant difference between study and control

group regarding intrapartum fetal distress and admission to neonatal intensive care unit. This finding agreed with Mohamed & Eltohamy, (2019). Entitled “Effectiveness of Self - Care Instructional Guideline on Maternal and Neonatal Outcomes Among Pregnant Women After Bariatric Surgery.” Who reported there was no significant difference between the two groups for any of neonatal characteristics studied except for intrauterine growth retardation, birth weight, and Apgar score at the 5th minute which was significantly lower in the study group than control group. These findings revealed that implementation of continuous care model improved studied women knowledge and practice toward care during pregnancy post bariatric surgery, that subsequently improve neonatal outcomes.

### **Limitations of the Study:**

The current study summarized three limitations, the first, non-probability purposive sampling limits the generalization of study results. The second, no stable place for conducting the educational sessions, as well as difficulties in organizing and scheduling phone calls. The third, lack of national and international references that examined the selected variables.

**Conclusion:** The present study concluded that continuous care model improves quality of life and health related behaviors among post bariatric surgery pregnant women. In addition, the positive affect on both maternofetal outcomes among women is study group than compared these outcomes among control group.

### **Recommendations:**

- The continuous care model should be incorporated as a nursing intervention for all post bariatric surgery pregnant women to promote their health behaviors and improve their quality of life.
- Applying educational programs for maternity' nurses about the continuous care model for managing their patients.
- A workshop for nurses working in the operating room and a plastic surgical department is being organized for enriching nurses with recent guidelines related to bariatric surgery.
- It is recommended to apply this continuous care model as hospital routine care in the study place and like ones.
- A printed copy of the nursing care based on continuous care model should be distributed among pregnant women with bariatric surgeries.

### **Further studies are suggested to:**

- Replication of the current study on larger probability sample is recommended to achieve generalized ability and wider utilization of this model.
- Examine the effect of the continuous care model on quality of life in other pregnancy-related surgeries and complications.

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**الملخص العربي****تأثير نموذج الرعاية المستمرة على جودة الحياة ونتائج الحمل بعد جراحات السمنة****الملخص:**

تعتمد النتائج طويلة المدى بعد جراحة علاج البدانة ونوعية الحياة على مدى جودة تعليم النساء حول كيفية دعم فقدان الوزن بعد العملية الجراحية ومشاركة السلوك المرتبط بالصحة الذي تحتاج النساء إلى القيام به. كان للممرضات دور مهم في رعاية النساء الحوامل بعد جراحة السمنة لتقليل مخاطر الأمهات وحديثي الولادة. كان الهدف من الدراسة الحالية هو تقييم تأثير نموذج الرعاية المستمرة على نوعية الحياة ونتائج الحمل الجينية بعد جراحة السمنة. التصميم: تصميم شبه تجريبي. الإعداد: أجريت الدراسة في عيادة التوليد وأمراض النساء الخارجية في مستشفى جامعة بنها. المواضيع: عينة هادفة من مجموع 108 من النساء البكرات بعد جراحة لعلاج البدانة " تم اختيارهم في الدراسة الحالية ، تم تخصيصها إلى مجموعتين: وشملت المجموعة الضابطة (54) من النساء البكرات كان لديهم الرعاية التمريضية العادية. وشملت مجموعة الدراسة (54) من النساء البكرات كان لديهم نموذج الرعاية المستمرة. الأدوات: تم استخدام خمس أدوات لجمع البيانات ، أداة استبيان ذاتية الإدارة ، وأداة استبيان معرفة المرأة ، واستبيان السلوكيات المتعلقة بالصحة ، واستبيان جودة الحياة لمنظمة الصحة العالمية و استبيان نتائج الأمهات والأطفال حديثي الولادة. أظهرت نتائج الدراسة وجود فروق ذات دلالة إحصائية عالية فيما يتعلق بالمعرفة وممارسة الرعاية الذاتية بين مجموعات الدراسة والمراقبة فيما يتعلق بالرعاية الذاتية للحمل بعد جراحة السمنة. النتائج: أظهرت الدراسة فروق ذات دلالة إحصائية عالية فيما يتعلق بالمعرفة وممارسة الرعاية الذاتية بين مجموعات الدراسة والمراقبة فيما يتعلق بالرعاية الذاتية للحمل بعد جراحة علاج البدانة ( $p < 0.000$ ) وكان هناك فروق إحصائية بين المجموعتين فيما يتعلق بنتائج الأمهات وحديثي الولادة بما في ذلك فقر الدم ونزيف ما قبل الولادة وسكري الحمل ونزيف ما بعد الولادة بين الأم وبين تأخر النمو داخل الرحم وانخفاض الوزن عند الولادة ودرجة أبعاد في الدقيقة 5 بين حديثي الولادة. الخلاصة: كان لنموذج الرعاية المستمرة تأثير إيجابي على نوعية الحياة ونتائج الأمومة. التوصيات: يجب دمج نموذج الرعاية المستمرة كتندخل تمريض لجميع النساء الحوامل بعد جراحة السمنة لتعزيز سلوكياتهن الصحية وتحسين نوعية حياتهن.

**كلمات البحث: نموذج الرعاية المستمرة ، ونوعية الحياة ، ونتائج الجنين الأم ، وجراحات علاج السمنة**