

Effect of an Educational Program on Minimizing Complications for Patients Post Bariatric Surgeries

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Abstract

Background: Bariatric surgery refers to weight reduction surgeries for obese persons mainly by restricting their food consuming through a variety of surgical procedures performed on gastrointestinal tract by reducing the size of the stomach. **Aim of the study:** Was to evaluate the effect of an educational program on minimizing complications for patients post bariatric surgeries. **Design:** Quasi-experimental design was utilized to fulfill the aim of the present study. **Setting:** Surgical departments and outpatient clinics at Benha University Hospital. **Subjects:** A purposive sample of 45 bariatric patients based on specific inclusion & exclusion criteria. **Tools:** Two tools were used in the study. **Tool I:** Patients' structured interview questionnaire. **Tool II:** Postoperative complications assessment and follow up sheet. **Results:** Only more than one fifth of the studied patients had good level of knowledge at preprogram implementation compared to less than half, two thirds & majority of studied patients respectively during 1st month, after 3 & 6 months post program implementation. There was a significant statistical difference between 3 months and 6 months post program implementation in relation to all items of late complication among the studied patients. There was a significant statistical relation between total knowledge score and studied patients residence, educational level as well as occupation preprogram implementation and after 3 months post program implementation at P-value < 0.05. **Conclusion:** Implementing of an educational program had statistically significant improvement of knowledge and reduction in the incidence of complications among bariatric patients. **Recommendations:** Replication of the study using a larger probability sample from different geographical regions for generalization of results.

Keywords: Bariatric Surgeries, Complications, Educational program.

Introduction

Obesity is a multifactorial chronic disease resulting from the excessive accumulation of body fat as a consequence of imbalance between energy intake and expenditure, also caused by interaction of environmental causes such as inheritance, high-calorie, high-fat intake, and absence of count of physical activity. It is currently a pandemic in developed countries, a product of change in lifestyle that is the second cause of preventable mortality after tobacco causes (Luesma et al., 2022).

Obesity is generally classified based on an individual's body mass index (BMI), calculated by dividing an individual's weight in kilograms by their height in square meters. A BMI of 18.5 to 24.9 kg/m² identified with a normal weight, whereas a BMI of 25 to 29.9 kg/m² is considered overweight, a BMI of 30 to 34.9 kg/ m² is called mild obese and a BMI of 35 to 39.9 kg/m² is considered moderate obese. A patient with a BMI more than 40 kg/m² is called morbidly obese (Zandomenico et al., 2022).

Bariatric surgery is a very effective treatment in the control of obesity, not only in

terms of effective and sustained weight loss over time, but also in the improvement of quality of life and in the resolution or improvement of associated comorbidities such as coronary artery disease, hyperlipidemia, hypertension, sleep apnea, type II diabetes, kidney disease (**Santos et al., 2022**).

A nurse plays a vital role in the treatment and care of patients, in their planning for surgery, in teaching patients about future complications after surgery, and in preparing for discharge. The specialized bariatric nurse is an important member of the multidisciplinary bariatric team caring patients before and after the operation (**Torensma et al., 2022**).

Significance of the study:

Over the past three decades, the prevalence of obesity among adults has more than doubled in over 70 countries and continues to rise. In a recent report by the Global Burden of Disease Obesity Collaborators, nearly 30% of the world's population was found to be affected by obesity. In both economically stable and emerging areas of the world, obesity has been one of the most critical public health issues (**Poon & Rosenbluth, 2022**).

The latest edition of the Global Registry published by the International Federation for the Surgery of Obesity and Related Disorders, reported that worldwide operations increased from 100092 in 2014 to 833687 in 2022 (**Troisi, 2022**). In Egypt, obesity prevalence ranges between 40 and 60%. Being overweight was more prevalent among males than females (42% vs. 35%) and then obesity prevalence was similar among males and females 28% (**Colbert & Kalarchian, 2019**). Benha University Hospital documented that the admitted patients for bariatric surgery in year 2018, 2019 and 2020 were about 100,

100 and 50 patients respectively (**Benha University Hospital statistical office, 2020**).

Aim of the study:

The aim of the present study was to evaluate the effect of an educational program on minimizing complications for patients post bariatric surgeries.

Research Hypotheses:

H1: Knowledge of patients with bariatric surgery will be improved after implementing the educational program compared with before.

H2: Postoperative complications of patients with bariatric surgery will be minimized after implementing educational program compared with before.

Research design:

A Quasi-experimental design was utilized to fulfill the aim of the present study.

Settings:

This study was conducted at General Surgical Departments and surgical outpatient clinic at Benha University Hospital in Qualubia Governorate, Egypt.

Subjects:

A purposive sample of 45 adult patients with bariatric surgeries were recruited in this study from both sexes, their age ranged from 20 to 60 years old and agreed to participate in the study.

Exclusion criteria: Patients diagnosed with critical and mental disorders and also, disoriented & comatose patients were excluded from the study.

Tools for data collection:

Two tools for data collection were used as the following:

Tool I: Patients' structured interview questionnaire: This tool was designed by the researcher after reviewing of relevant and recent literatures (**Ustundag et al., 2020; Baheeg et al., 2022; Almezaiien, 2022; & Mohammed et al., 2022**).

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It was consisted of 22 multiple choice questions and divided into three parts as the following:-

Part 1: Patients' personal data; it included 6 questions and aimed to assess patients' age, gender, marital status, residence, educational level & occupation.

Part 2: Patients' health history; it composed of 16 multiple choice questions and aimed to assess patients' clinical data such as their weight, height and BMI pre and post program implementation.

Part 3: Patients' knowledge assessment: It was developed by the researcher after reviewing the related and recent literature (Maghrabi et al., 2019; Elsayed et al., 2020; Altaheri et al., 2020; Ibrahim 2021; El-Maghawry et al., 2021; & Tan et al., 2022). It was composed of 86 closed ended multiple choice questions and aimed to assess bariatric patients' knowledge regarding operation about obesity, bariatric surgery, preoperative preparations, postoperative bariatric surgery complications, preventive measures for complications, wound care, pain management and medication, general nutrition, nutrition at the 4 phases post bariatric surgery and discharge instructions post bariatric surgery.

Scoring system:

Patient answered for each question that was checked with model key answer. One score was given for each correct answer & zero score for incorrect answer & don't know. The total scores was 86 score which equal 100%. The total scores of knowledge was summed up, converted into a percentage and classified as following (El-dawoody et al., 2016 & Ali, 2019).

- **Good knowledge** if total score $\geq 75\%$.
- **Average knowledge** if score $50\% - <75\%$.
- **Poor knowledge** if total score $< 50\%$.

Tool II: Post-operative complications assessment and follow up sheet:

It was designed by the researcher after reviewing related literatures (Hasan et al., 2020; Abd El-shaheed et al., 2020; Gluszyńska et al., 2022 & Giannopoulos et al., 2022). It included 12 closed ended questions categorized under two domains.

Early complications: it included 5 selected complications: bleeding, staple line leakage, wound infection, anastomotic stenosis and deep venous thrombosis.

Late complications: it included 7 selected complications: dumping syndrome, internal hernia, bowel obstruction, impaired skin integrity, marginal ulceration, recurrence of obesity and vitamins and minerals deficiency.

Scoring system:

Every postoperative complication was scored a code of 0 or 1 where 1 representing presence of complication and zero representing absence of complication.

Educational program (Booklet) about bariatric surgeries:

Educational program was designed by researcher into Arabic language based on patient's assessment and needs after reviewing the most recent relevant literatures (Deabes et al., 2020; Tiryag & Atiyah, 2021; Stenberg et al., 2022 & De Simone et al., 2022), to meet patients' needs about knowledge and minimize complications for post-surgery patients.

Content validity

The tools and the program were revised and ascertained by a panel of five experts of medical surgical nursing, Benha Nursing Faculty. Their opinions were regarding the content, format, layout, consistency, accuracy and relevancy of the tools. According to their opinion minor modifications were applied.

Reliability:

Reliability test of the developed tool was done statistically through Cronbach's alpha test that was 0.83 for patient's knowledge questionnaire.

Ethical consideration:

The research approval was approved by scientific research ethics committee in the Faculty of Nursing Benha University. An official permission obtained from medical director of Benha University Hospital and head nurse of surgical departments (male and female surgical department) and outpatient clinic at Benha University Hospital before starting the study.

The aim of this study was explained to patients and they were assured that all information will be confidential and it will be used only for research purpose only. Written consent of participation in the study obtained from studied patients. Patients were informed that they are allowed to choose to participate or not in the study and they have the right to withdraw from the study at any time without giving any reasons.

Pilot study:

Pilot study was conducted on 10% of the study sample in order to test feasibility, clarity and applicability of the tools then necessary modifications were carried out. The patients who were included in the pilot study were excluded from the study sample because minor modifications were done after conducting the pilot study.

Field work:

The fieldwork was performed over a period of eight months started from the beginning of October, 2021 till the end of May, 2022. The study was conducted on four phases as the following: assessment, planning, implementation and evaluation phase.

Assessment phase:

Once the permission was taken from patients and written after explaining the purpose of the study, the researcher interviewed each patient individually to assess baseline data on personal data, medical data and knowledge assessment using tool I for studied patients pre-program

implementation. Also, they were assessed for postoperative complications using tool II as baseline data assessment.

Planning phase:

Researcher collected data about the study setting to put plan for carrying out the study. Based on the information obtained from pilot study and patients' assessment, in addition to the recent related literature, the researcher designed an educational program.

This program was designed according to patients' needs and deficiencies. The general objective was to improve knowledge and minimize complications for patients post bariatric surgeries. The form of booklet which was color printed and was supplemented by photos for more illustration to help patients to understand the content. It was consisted of information about bariatric surgery, post-operative instructions, life style modifications regarding exercise, physical activity for bariatric patients and instructions on getting back to work and returning to usual activities. Moreover teaching material was prepared e.g. demonstration, power point, data show and printed handout was helped in covering the theoretical and all information.

Implementation phase :

The implementation phase was achieved through the educational sessions. It was carried out into five sessions that included, three sessions for theory, two sessions for practice. The researcher dealt with all studied patients to avoid bias of data. Total number of the studied sample was 45 patients. Thus, they were divided into 11 groups. Each group included 4-5 patients in every session. The researcher interviewed with the patients three days per week in the morning and afternoon shifts in the study setting.

Each session lasted for 45 minutes, started with a brief summary about what had been given in the previous session, and then the objectives of the new session were explained

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by using simple language to suite the level of all patients' education. Motivation and reinforcement during session were used in order to enhance motivation for the sharing in this, answered any raised questions and gave feedback. The final form of the educational booklet was designed and distributed to each patient in the first day of program implementation to ensure their understanding.

In the first session, the researcher introduced her-self, gave introduction on educational program and explained the objectives of the educational program. Patients received information about bariatric surgery overview as anatomy of the stomach, definition of obesity and its management, definition, types, indications, contraindications of bariatric surgery.

In the second session, patients received information about investigations of bariatric surgery, post-operative complications and factors affecting complications and preoperative instructions & care of bariatric surgery.

In the third session, patients were provided by information about post-operative instructions about wound care, how to deal pain, medications, nutrition, preventive measures of complications and instructions on discharge after bariatric surgery and follow up visits.

In the fourth session, patients carried out and follow the dietary educational program after bariatric surgery regarding minimizing of bariatric complications such as eating balanced meals with small portions, follow a diet low in calories, fats and sweets, eat slowly and chew small bites of food thoroughly, as well as the vitamins and minerals supplementary with the keep a daily record for calories and protein intake.

In the fifth session, patients carried out and received exercise, physical activity for bariatric patients and instructions on getting

back to work and returning to usual activities and the recommended exercise after bariatric surgery such as walking, aerobic exercise and strength training to maintain weight loss and minimize postoperative complications. Discussion during the educational program sessions were used to enhance learning. At the end of these sessions, the researcher informed the patients that they will be evaluated by the researcher after three and six months from sessions.

Evaluation phase:

After the educational program, the researcher interviewed bariatric patients individually and evaluated them using the same pre-test tools (tool I part 3) patients' knowledge assessment questionnaire, tool (II) postoperative complications assessment and follow up sheet by comparing with baseline assessment.

Comparison between all patient's pre-test and post-test finding was done at the end of the study during 1st month and after 3rd months and 6th months to determine the effect of an educational program on minimizing complications for patients post bariatric surgeries.

Statistical analysis

Results were collected, statistically analyzed and tabulated using statistical package of social science (SPSS) version 23 and Microsoft Excel version 2010. Quantitative data were presented as mean and standard deviation (SD) while qualitative data were expressed as frequency and percentage. Shapiro-Wilk test was used to examine the normality of data distribution. Chi-Square independency test was used to test the significance between qualitative variables. Moreover, McNemar's Test, Marginal Homogeneity test and Friedman test were used to test the significance of the paired qualitative variables. The observed statistical differences were considered: Non-significant

(NS) if P-value > 0.05. Significant (NS) if ≤0.05.

Results:

Table (1): Shows that, 37.2 % of the studied patients were in age group 31- 40 years old with mean age 36.66 ± 8.34 , as well, 62.2% of them were female. Regarding marital status, 71.2% & 64.4% of the studied patients were married and were residents in urban areas respectively, while, 66.6% & 53.4% of them had university education and practical office work.

Table (2): Represents that, there were a significant statistical differences between preprogram implementation and during 1st month, after 3 months as well 6 months post program implementation among studied patients regarding their mean weight and BMI at P-value ≤ 0.05.

Figure (1): Shows that, there was an improvement among studied patients' regarding their total knowledge level during

1st month, after 3 months as well 6 months post program implementation.

Table (3): Shows that, 4.5% & 4.5% of the studied patients had symptoms of staple line leakage and wound infection respectively during 1st month post program implementation. While, 15.5% & 15.5% of the studied patients had symptoms of anastomotic stenosis and Deep Vein Thrombosis (DVT) respectively during 1st month post program implementation.

Table (4): Shows that, there was a significant statistical difference between 3 months and 6 months post program implementation in relation to all items of late complication among the studied patients at P-value < 0.05.

Table (5): Shows that, there was a significant statistical relation between total knowledge score and studied patients residence, educational level as well as occupation preprogram implementation and after 3 months post program implementation at P-value < 0.05.

Table (1): Distribution of studied patients regarding personal characteristics (n=45).

Personal characteristics		N	%
Age (in years)	20- <30	15	33.4
	30- <40	17	37.2
	40- <50	5	11.2
	50- 60	8	17.7
	Mean ± SD	36.66±8.34	
Gender	Male	17	37.8
	Female	28	62.2
Marital status	Single	10	22.3
	Married	32	71.2
	Widow	0	0.0
	Divorced	3	6.6
Residence	Urban	29	64.4
	Rural	16	35.6
Education	Read and write	4	8.8
	Secondary	11	24.4
	University	30	66.6
Occupation	Office work	24	53.4
	Hand work	3	6.6
	House wife/ No working	18	40.0

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Table (2): Distribution of studied patients regarding their mean weight, height and BMI pre and post program implementation (n=45).

Items	Pre program	Post- program			Friedman Test	P-value
		During 1 st month	3 months	6 months		
Weight	126.38 ± 24.97	119.49±22.57	103.51±23.14	81.41 ± 20.87	2.297	0.000*
Height	164.42 ± 9.14	164.42 ± 9.14	164.42 ± 9.14	164.42 ± 9.14	NA	NA
BMI	46.78 ±7.73	44.2±6.87	38.3±7.91	30.56 ±7.53	1.698	0.000*

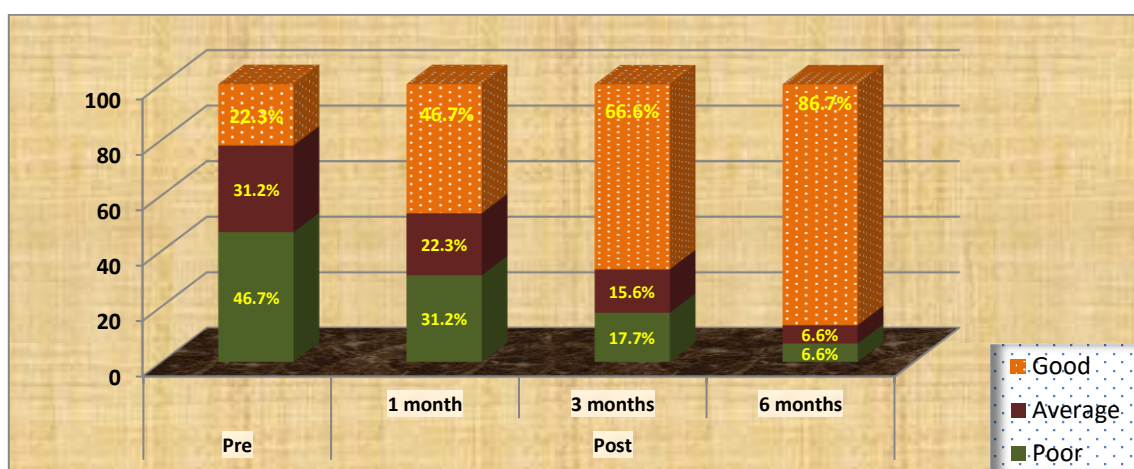


Figure (1): Distribution of studied patients regarding their total knowledge level pre and post program implementation (n=45).

Table (3): Distribution of studied patients regarding their early complications post program implementation (n=45).

Early complication		During 1 month	
		N	%
Bleeding	Yes	4	8.8
	No	41	91.2
Staple line leakage	Yes	2	4.5
	No	43	95.5
Wound infection	Yes	2	4.5
	No	43	95.5
Anastomotic stenosis	Yes	7	15.5
	No	38	84.5
Deep vein thrombosis (DVT)	Yes	7	15.5
	No	38	84.5

Table (4): significant difference between post 3 monthes & post 6 monthes regarding late complication among studied patients (n=45).

Late complications		Post program implementation				McNemar's Test	P-value
		3 months		6 months			
		N	%	N	%		
Dumping syndrome	Yes	10	22.3	4	8.8	6.811	0.033*
	No	35	77.7	41	91.2		
Internal hernia	Yes	9	20	4	8.8	3.941&	0.012*
	No	36	80	41	91.2		
Bowel obstruction	Yes	6	86.6	2	4.4	5.719	0.016*
	No	39	13.4	43	95.6		
Impaired skin integrity	Yes	12	26.6	6	13.3	1.238&	0.010*
	No	33	73.3	39	86.7		
Marginal ulceration	Yes	9	20.0	1	2.3	8.584&	0.053*
	No	36	80.0	44	97.7		
Recurrence of obesity by BMI	Yes	11	24.4	6	13.3	1.800&	0.080
	No	34	75.6	39	86.7		
Vitamins and minerals deficiency	Yes	24	53.3	9	20.0	9.824	0.019*
	No	21	46.7	36	80.0		

Table (5): Statistical relation between total knowledge score and personal characteristics of the studied patients pre and post 3 months implementation of program (n=45).

Variables		Total knowledge score													
		Pre- program						X ² & P-value	Post 3 months						X ² & P-value
		Poor		Average		Good			Poor		Average		Good		
		N	%	N	%	N	%		N	%	N	%	N	%	
Age (in years)	20- <30	7	15.6	4	8.9	4	8.9	5.660 & 0.462	2	4.4	1	2.2	12	26.7	4.589& 0.597
	30- <40	9	20.0	3	6.7	5	11.1		0	0.0	2	4.4	15	33.3	
	40- <50	2	4.4	3	6.7	0	0.0		0	0.0	0	0.0	5	11.1	
	50-60	3	6.7	4	8.9	1	2.2		1	2.2	0	0.0	7	15.6	
Gender	Male	5	11.1	7	15.6	5	11.1	3.268 & 0.195	0	0.0	3	6.7	14	31.1	6.821 & 0.822
	Female	16	35.6	7	15.6	5	11.1		3	6.7	0	0.0	25	55.6	
Residence	Urban	11	24.4	10	22.2	8	17.8	2.688& 0.008*	2	4.4	3	6.7	24	53.3	1.805& 0.045*
	Rural	10	22.2	4	8.9	2	4.4		1	2.2	0	0.0	15	33.3	
Education	Read and write	0	0.0	3	6.7	1	2.2	10.368& 0.035*	0	0.0	1	2.2	3	6.7	4.199& 0.038*
	Secondary	3	6.7	3	6.7	5	11.1		0	0.0	1	2.2	10	22.2	
	University	18	40.0	8	17.8	4	8.9		3	6.7	1	2.2	26	57.8	
Occupation	Office work	12	26.7	10	22.2	2	4.4	9.321& 0.052*	0	0.0	2	4.4	22	48.9	9.231& 0.056*
	Hand work	0	0.0	1	2.2	2	4.4		0	0.0	1	2.2	2	4.4	

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Discussion:

Obesity pandemic has become a global health priority. Complications increase commensurate with increasing body mass, particularly with increasing abdominal fat. Complications include type 2 diabetes, hypertension, myocardial infarction, gallstones, sleep apnea, and musculoskeletal complaints (**Olsén et al., 2021**).

Regarding the age, the current study findings showed that more than one third of the studied patients were in age 31-40 years old with mean age 36.66 ± 8.34 . This may be due to this age is called early adulthood during it people tend to care of their body image and general appearance. This result was consistent with **El-Maghawry et al., (2021)**, in the study entitled "Effect of an educational program on lifestyle modification for patients undergoing laparoscopic sleeve gastrectomy surgery, in Zagazig University Hospitals", who mentioned that more than half of the studied patients were in the age group from 35 to 40 years old, their mean age 34.6 ± 5.7 years old.

Owing to gender; result of the present study revealed that about two third of the studied patients were females. This may be due to females are more interested in caring about their body shape, image and appearance more than males and may be related to social issues as chance for marriage. This result was supported by **Sabry et al., (2020)**, in a study entitled "Laparoscopic mini gastric bypass as a revisional procedure after failed primary restrictive bariatric surgery, in Ain Shams University Hospitals, Egypt", who found that, about more than half of the studied patients were females.

Concerning marital status, results of the present study revealed that approximately three quarter of the studied patients were married. It might be explained that age categories of the studied subjects were within the marital age. This result agreed with

Alsubaie et al., (2021), conducted a study entitled "Depression and anxiety on post-bariatric surgery among Saudi adults residing in Abha, Asir province, Saudi Arabia", and documented that approximately two third of the studied patients were married.

Pertaining residence, results of the present study illustrated that nearly two third of the studied patients resided in urban areas. This may be due to the nature of industrial life in the urban areas where the fast foods restaurants present, people using elevator instead of climbing stairs, lack of activity and sedentary lifestyle. All these issues reflect the unhealthy lifestyle of people living in the urban areas which make them more predispose to obesity.

This result agreed with **Ibrahiem et al., (2021)**, carried out a study entitled "Assessment of compliance for postoperative patients with bariatric surgery, at El-Demerdash Hospital of Ain Shams University, Egypt", who found that about three quarter of the studied patients were living in urban areas.

Concerning the educational level, result of the present study documented that two third of the studied patients had University education. This may be due to that educated patients are more aware of obesity problems and seeking about its management. This result was in the same line with **Mohammed et al., (2022)**, conducted a study entitled "Health promotion program regarding lifestyle behaviors among bariatric surgery patients at Assuit University Hospital", who illustrated that, nearly half of the studied patients had University graduates.

Owing to the occupation, the current study findings showed that more than half of the studied patients had practical office work. This may be due to more than half of the studied patients were employed and mainly depend on eating fast foods, because they have a lack of time to prepare healthy foods at their homes

and they spend a lot of times outside their homes where they were hungry.

This result was supported by **Tolvanen et al., (2022)**, in a study entitled "Patients' experiences of weight regain after bariatric surgery, Sweden", who reported that majority of the studied patients were employed.

Concerning mean weight, height and BMI, the current study findings showed that the studied patients was seriously/morbidly obese preprogram implementation which improved to moderate obese and mild obese respectively after 3 & 6 months post program implementation. Additionally, there was a significant statistical reduction among the studied patients regarding their mean weight and BMI between preprogram implementation and during 1st month, after 3 month as well 6 months post program implementation at P-value ≤ 0.000 . It may be due to the fact that losing body weight is a clear sign of better health so, normal values were reached within 6 months after the program.

This result was consistent with **Mahran et al., (2022)**, carried out a study entitled "Dilemma of local git hormones after bariatric maneuvers, El-Minia, Egypt", and revealed that change in mean BMI, preprogram, two-weeks and two-month post-program in sleeve gastrectomy and minigastric bypass were seriously/morbidly obese, moderate and mild obese respectively. So, there is a significant change in BMI in the two operations two-weeks and two-months post-program.

Owing to total knowledge level pre & post program, result of the current study revealed that there was a significant statistical improvement post program implementation during 1st month, after 3 months as well 6 months post program implementation regarding studied patients' total knowledge level post program implementation. This can be explained by fact that pre-and post-operative training sessions offer practical

knowledge, expertise and support to bariatric patient in order to make necessary changes and reduce weight.

This finding was in accordance with **Sierzantowicz, et al., (2020)**, in a study entitled "Assessment of education effects on patient involvement and bariatric treatment outcome: an observational study, Poland", who stated that the participants who participated in the education sessions the knowledge level was high, both after 3 months and after 6 months, which was statistically significant. According to recommendations strength training should be undertaken two to three times a week.

Furthermore, **El-Maghawry et al., (2021)**, stated that majority of patients had unsatisfactory knowledge about life style modification after surgery before applying health education program, while the knowledge of patients was satisfactory after applying the health education program in the 1st, 2nd and 3rd postoperative assessments. And this difference was statistically significant.

Pertaining to early complications post program, results of the current study revealed that minority of the studied patients had symptoms of bleeding during 1st month post program implementation. This due to that patient recognized the importance of follow up visits during the educational session on minimizing complications where it promote health and reduce the risk of weight regain. This result supported by **Giannopoulos et al., (2022)**, in a study entitled "Management of gastrointestinal bleeding following bariatric surgery, USA" who emphasized that when bleeding develops within 30 days of surgery, it is characterized as early. Bleeding complications most frequently occur in immediate postoperative period. Also, report that up to three quarter of postoperative bleeding complications present within the first

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4 hours after surgery and minority of bleeding complications present during month following bariatric surgery.

As well, **Gluszyńska et al., (2022)**, conducted a study entitled "Risk factors for early and late complications after laparoscopic sleeve gastrectomy in one-year observation, Poland", who illustrated that the most common early complications that were observed in our studied patient were staple-line leakage. Staple-line leak is one the most serious and life-threatening complication that occurs in minority of patients undergoing laparoscopic sleeve gastrectomy.

In addition **Schlossauer et al., (2021)**, carried out a study entitled "Post-bariatric abdominoplasty: analysis of 406 cases with focus on risk factors and complications, Germany", and stated that a significant increase in wound complication after abdominal contouring in weight loss surgery patients (about two fifth versus about one quarter) compared to patients who did not undergo weight loss surgery by univariate methods of analysis.

Furthermore **Ardila-Gatas & English, (2022)**, conducted a study entitled "Endoscopic management of early complications following bariatric surgery, New York, USA", and reported that anastomotic stricture and stenosis occur between 3-4 weeks postoperatively. The incidence of strictures varies depending on the bariatric procedure performed, minority for sleeves and minority for gastric bypass.

Moreover, **Aminian et al., (2022)**, in the study entitled "The American society for metabolic and bariatric surgery (ASMBS) updated position statement on perioperative venous thromboembolism prophylaxis in bariatric surgery, USA", who illustrated that there was no significant statistical difference between pre and during 1st month post program implementation.

Owing to late complications post program (dumping syndrome), results of the current study revealed that there was a significant statistical reduction in the incidence of dumping syndrome among the studied patients from more than one fifth post 3 months of program implementation to minority post 6 months.

This result was in the same line with **Fink et al., (2022)**, in a study entitled "Obesity surgery: weight loss, metabolic changes, oncological effects, and follow-up, Freiburg, Germany", who stated that prevalence of dumping syndromes after roux-en-Y gastric bypass is two fifth.

Pertaining to impaired skin integrity post program, results of the current study revealed that there was a significant statistical reduction in the incidence of impaired skin integrity among the studied patients from more than one forth post 3 months of program implementation to minority post 6 months.

This finding had an agreement with **Sadeghi et al., (2022)**, in their study about "Post-bariatric plastic surgery: abdominoplasty, the state of the art in body contouring, USA", who reported that in patients who have skin laxity limited to the abdomen can be considered. When preformed in post-bariatric patients, the procedure is typically converted to an "extended abdominoplasty" by expanding the incisions laterally and posteriorly to avoid a dog-ear deformity.

Pertaining to recurrence of obesity by BMI post program, results of the current study revealed that there was no a significant statistical difference between 3 months and 6 months post program implementation in relation to recurrence of obesity by BMI among the studied patients. This may be attributed to different factors have been identified: medical (anatomic factors, nutritional deficiencies, and metabolic parameters), psychological (emotional ties to

cravings and food addiction), or educational (dietitian counseling, preoperative weight loss goals, calorie counting, and noncompliance to follow up).

This result was agreed **Bendari et al., (2022)**, in a study entitled "The incremental value of multislice CT in diagnosis of late bariatric surgery complications, Tanta, Egypt" who showed that the most common complaint was recurrent weight gain.

Pertaining to vitamins and minerals deficiency post program, results of the current study revealed that there was a significant statistical reduction in the incidence of vitamins and minerals deficiency among the studied patients from more than half post 3 months of program implementation to one fifth post 6 months.

This result was agreed **Elrefai et al., (2022)**, in a study entitled "Comparative study between single anastomosis sleeve jejunal bypass, sleeve gastrectomy and one anastomosis gastric bypass: a prospective randomized trial at Mansoura University", who reported that after six months of surgery, majority of all patients had stopped taking oral supplements and multivitamins with no postoperative nutritional complications at six months follow up.

Relation between total knowledge and personal data pre / post program implementation, results of the current study revealed that there was a significant statistical relation between total knowledge score and studied patients residence, educational level as well as occupation preprogram implementation and after 3 month post program implementation. From the researcher' point of view, explained the fact that higher educational level helps patients to acquire knowledge.

This result was similar to **Cadena-Obando et al., (2020)**, performed a study entitled "Are

there really any predictive factors for a successful weight loss after bariatric surgery?, Mexico", who displayed that in the posttest, there was a significant relationship between educational level and residences of patients and their total knowledge score.

Conclusion

Patients with bariatric surgery had marked improvement in knowledge level, while they had significant statistical reduction in the incidence of complications and their mean weight as well BMI during 1st month, post 3 and 6 months post program implementation which confirmed the study hypotheses.

Recommendations:

- Replication of the study using a larger probability sample from different geographical regions for generalization of results.
- Similar studies are needed to assess the long-term effects of such educational programs.
- Further research is needed to assess the effects of preoperative education on postoperative complications and surgical outcomes among patients with bariatric surgery.
- Training courses should be provided to nurses to increase their knowledge and skills needed for caring of bariatric surgery patients about bariatric surgery and prevention of postoperative complications.
- Establishment of health care educational center in Benha University Hospital to educate patients about necessary instructions regarding their conditions using manual booklet with colored pictures and illustrated pamphlets for each patient.

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تأثير برنامج تعليمي على تقليل المضاعفات للمرضى بعد عمليات جراحة السمنة

آيات على عبدالرازق حبلص- منال حامد محمود منصور -أمل سعيد طه رفاعي -صفاء محمد السيد ابراهيم

جراحة السمنة هي طريقة فعالة لإنقاص الوزن لدى مرضى السمنة الذين يعانون أيضاً من أمراض مصاحبة. تنقسم عمليات إنقاص الوزن إلى ثلاث فئات ؛ العمليات المقيدة وسوء الامتصاص والمختلطة. لذا هدفت هذه الدراسة إلى تقييم تأثير برنامج تعليمي على تقليل المضاعفات للمرضى بعد عمليات جراحة السمنة وقد أجريت هذه الدراسة في أقسام الجراحة العامة حريم ورجال والعيادات الخارجية للجراحة في مستشفى بنها الجامعي بمحافظة القليوبية. تم اختيار عينة غرضية مكونة من 45 مريضاً بحيث كان سنهم من 20 الى 60 عاما, وإشتملت العينة كلا الجنسين (ذكور واثاث), والذين وافقوا على المشاركة في الدراسة. وبناء على نتائج الدراسة الحالية, شهد المرضى الذين خضعوا لجراحة السمنة تحسناً ملحوظاً في مستوى المعرفة ، بينما كان لديهم انخفاض إحصائي في حدوث المضاعفات ومتوسط وزنهم وكذلك مؤشر كتلة الجسم خلال الشهر الأول ، وبعد 3 و 6 أشهر بعد تنفيذ البرنامج الذي يؤكد فرضيات الدراسة. وقد أوصت نتائج الدراسة تكرار الدراسة باستخدام عينة احتمالية أكبر من مناطق جغرافية مختلفة لتعميم النتائج.