

The Effect of an Educational Intervention on Dumping Syndrome and Anxiety Level among Patients Undergoing Bariatric Surgery

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Abstract

Introduction: Obesity is considered a common health problem worldwide that affects all ages. It is a complex chronic condition that results from an interaction of many endocrine, behavioral, social and psychological factors. Treatment of obesity include several strategies such as dietary change, exercise and lifestyle modification, behavioral change, and weight loss-surgeries. Bariatric surgeries are group of permanent or reversible surgical procedures performed for weight reduction. One of the most common physiological gastrointestinal disorders after bariatric surgeries is dumping syndrome. Bariatric surgery can also present negative psychological impact resulting in anxiety, depression, low self-esteem, and poor quality of life. The aim of the present study was to investigate the effect of educational intervention on early physiological and psychological outcomes for patients undergoing bariatric surgeries.

Methods: the current study utilized a quasi-experimental design to collect data from 40 subjects who were divided into control and intervention groups. A structured interview was conducted at the General Surgery Department, Tanta University Hospital and Outpatient Surgery Clinic, Tanta City, Egypt. The study questionnaire included bio-socio-demographic data, dumping syndrome signs and symptoms questionnaire and Beck Anxiety Inventory.

Results: Majority of the study sample were females, relatively young, married, university graduates and lives in urban areas. Most of the participants used to consume soft drinks, were not exercising, receiving iron and vitamin supplements, has no past medical history, has morbid obesity and performed sleeve gastrectomy. Intervention group showed lower signs and symptoms of dumping syndrome and the symptoms improved over the time. In addition, anxiety was less experienced among intervention group with statistically significant association between control and intervention 2 weeks and one month post the surgery.

Conclusion and recommendations: Preoperative educational intervention in this study enhanced postoperative physiological and psychological outcomes for bariatric surgeries patients. Results from this study have potential clinical implications that need to be considered by health care providers. Further research with larger sample and including of qualitative prospective would provide better explanation in this regard.

Key Words: Bariatric Surgery, Educational Intervention, Dumping Syndrome, Anxiety

Date of Submission: 16-05-2019

Date of acceptance: 01-06-2019

I. Introduction

Obesity is a common health problem that affects all ages worldwide^[1,2]. Obesity is a complex chronic condition that results from an interaction of many endocrine, behavioural, social and psychological factors. It produces short-term health problems such as dyslipidaemia, hypertension and insulin resistance^[3]. Obesity also contribute to long-term conditions as type 2 diabetes, cardiovascular diseases, cancer, non-alcoholic fatty liver disease, polycystic ovarian disease, anxiety and depression and it is also connected to orthopaedic complications^[4-8]. In the United States, obesity has become more prevalent and more than one third of adult population is having obesity. In addition, obesity is one of the leading causes of death in the United States with estimated 30,000 deaths annually^[4,5]. With the dramatic changes in life style, obesity has been reported as the highest among different age groups in Egypt. By the year 2015, 2.3 billion people were diagnosed as overweight; out of them 700 million were obese^[1].

Management of obesity include several strategies such as dietary change, exercise, lifestyle modification, behavioural change, and weight loss-surgeries. The unified goal for all these strategies is to decrease calories intake and reaching a healthy weight. Studies suggested that these strategies could not keep long term weight control especially among very obese people. Bariatricsurgery has known to be a persuasive method to reduce weight when different strategies for weight reduction failed or not convenient^[9,10].

Bariatric surgeries are group of permanent or reversible surgical procedures performed for weight reduction. They include Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG), Adjustable Gastric Banding (AGB), Biliopancreatic Diversion with Duodenal Switch (BPD/DS) and Intra-gastric Balloon (IB)^[11-12]. The mechanism of these surgeries is that the stomach is reduced in size and the new stomach pouch holds a considerably smaller amount of food that results in reduction in calories intake. In addition, there is an effect for these surgeries on gut hormones that impact number of factors including hunger and blood sugar control^[8, 9].

The most common physiological gastrointestinal disorder reported by patients after bariatric surgeries is dumping syndrome that happened as a result of the reduction of the stomach size. Signs and symptoms of dumping syndrome include nausea, vomiting, diarrhea, lightheadedness, cold sweat, heart burn, abdominal distension, full breath odor, foamy bitter mouth, cramps or numbness in the lower limbs, stomach pain and constipation^[12]. Research indicated that about 85% of bariatric surgeries patients would experience dumping syndrome at some points after the surgery. Symptoms of dumping syndrome vary from mild to severe that happen due to rapid empty of food contents from the stomach into small intestine. Poor food choices after the surgery especially consumption of food rich in sugars, high glycemic carbohydrates, dairy products, fats, and fried foods alleviate signs and symptoms of dumping syndrome. Bariatric surgery can also present negative psychological impact resulting in anxiety social stigma, self-esteem issues, anxiety, depression and poorer quality of life^[12-13].

Preoperative intervention is known to enhance recovery and improve postoperative outcomes^[13]. Incorporating preoperative intervention within a standard of care would contribute to better outcomes, reduce complications, decrease the length of hospital stay, improve quality of life and facilitate the patient's return to normal life.

Significance and aim of the study

No researches were found in the review of literature regarding pre-operative education about dumping syndrome and early anxiety for individuals undergoing bariatric surgery. There is a plenty of intervention regarding weight loss, quality of life, resolution of social life after surgery, decline of co-morbidities after surgery, improvement of type 2 diabetes, hypertension, sleep apnea, degenerative joint disease, and lower extremity venous stasis^[14,15]. As a result, it would be wise to conduct this research to examine the effect of such educational intervention on early physiological and psychological outcomes after bariatric surgery. Results from this research would assist health care providers specially the nurse educators to meet the needs of individuals undergoing bariatric surgery to improve their post-surgical outcomes.

Research hypothesis

H1: Participants in the educational intervention will exhibit less prevalence of dumping syndrome signs and symptoms after the bariatric surgery than those in the control group.

H2: Participants in the educational intervention will report less anxiety after the bariatric surgery than those in the control group.

II. Materials and methods

Design: A quasi-experimental design was utilized for this study.

Setting: The study was conducted at the General Surgery Department, Tanta University Hospital and Outpatient Surgery Clinic, Tanta City, Egypt.

Subjects: A convenience sample of 40 adult patients of both genders scheduled for bariatric surgery. The sample size calculation based on patient admission in the hospital and expected physiological stability after the operation. The general surgical department at the study setting performs 1 to 2 bariatric surgeries per week. The 40 subjects were divided into 2 groups; control and intervention with 20 subjects each. The control group received the routine hospital care and the intervention group received the educational intervention before the surgery. Inclusion criteria included adult patients, both genders, undergoing any type of bariatric surgeries, have no associated diseases such as peptic ulcer, ulcerative colitis, anxiety disorder, physiologically stable, and agree to participate in the study.

Tools of data collection: A structured interview was conducted using a questionnaire developed for the purpose of the present study that include the following:

Tool 1: Health assessment tool which include two parts as follow

Part A: Socio-demographic characteristics such as age, gender, marital status, educational level, working and residence

Part B: Anthropometric, dietary assessment and medical history; that include number of daily meals, snacks, consuming of soft drinks, exercise, receiving vitamins and dietary supplements, BMI, medical history, as anemia, hypertension, cardiac disease, currently used medication and type of the bariatric surgery. BMI was calculated by dividing the weight in kilogram on the height in meter squared. The resulted number from the equation was calculated as under-weight (>18.5), normal/ideal weight (18.5- 24.9), over weight (25- 29.9), obese (30- 39.9) and morbid obese (>40).

Tool 2: Dumping syndrome sign and symptoms tool that was developed by the researchers after reviewing related literatures. The tool includes all possible dumping syndrome signs and symptoms that could be experienced after bariatric surgery. The reported signs and symptoms of dumping syndrome include nausea, vomiting, lightheadedness, cold sweats, abdominal distension, heart burn, fatigues and feeling lazy, foul breath odor, formation of foam and bitter taste in the mouth and cramps or stomach pain. Response options for each item are (yes) if the symptom present and (no) if it is absent.

Tool 3: Beck Anxiety Inventory (BAI) that has been developed by Beck, Epstein, Brown, & Steer^[16] and modified by the researchers to assess anxiety post bariatric surgeries. The tool includes 21 items on 4-points Likert scale with (0) not at all, (1) mildly- but it didn't bother me much, (2) Moderately-it wasn't pleasant sometimes, and (3) severely-it bothered me a lot. Responses for the current study were used as not at all, mild, moderate and severe. This tool has been extensively used and it has an acceptable validity and reliability. The study tools were piloted on 4 subjects for feasibility and applicability before the main data collection. Reliability of the study questionnaire was tested and reported as Cronbach's alpha of .71 for health assessment tool and .77 for Beck Anxiety Inventory.

Method of data collection:

Permission to carry out the study was obtained from the authorized person in the general surgical department at Tanta University Hospital. The researchers used to check at the setting every day for any type of bariatric surgeries. Scheduled cases for the surgery were admitted within 2 days to a week pre-operative for lab investigation and preparation for the surgery. The researchers meet the eligible subjects after admission and explain about the study for intervention group. For those who agree to participate, the educational intervention sessions were provided to the intervention group and the follow up plan was arranged for both groups in time frame of one, two weeks and one month post the bariatric surgery.

Ethical consideration:

Eligible subjects were approached by the researchers after admission. The purpose of the study was explained, and participants were informed that they have the right to participate in the study and to withdraw at any time without any effect on their care. Subjects were also notified that there is no risk for their participation in the study; however, they will get the benefit of safe postoperative outcomes. Subjects who agree to take a part were asked to provide consent. Confidentiality and anonymity were maintained. Participants' phone number was taken by the researchers after their agreement to arrange the follow up assessment in the outpatient clinic to complete data collection.

The educational intervention:

The educational intervention was conducted in three phases:

- A- Assessment phase: Base line data were collected from patients in both control and intervention groups by using tool I part A and B before the operation. To avoid transmission of the intervention to the control group, data were collected first from control group over a period of 10 weeks. After reaching 20 subjects for the control group, data collection stopped and data from the intervention group started. Data collection for the intervention group took 3 months to complete.
- B- Implementation phase: This phase was done for the intervention group only where the researchers meet the subjects after collecting the base line data, then schedule the educational intervention sessions. The intervention included 4 sessions 45 minutes to one hour each. The first session included information about bariatric surgery, its benefits and hazards, the second and third sessions contained detailed knowledge about the dumping syndrome causes, possible signs and symptoms and how to avoid and deal with after the bariatric surgery. The fourth session included anxiety causes and manifestations after the surgery and how to manage and overcome. The intervention was presented in PowerPoint presentation with clear information and pictures and the contents were printed in a form of booklet in Arabic language and provided for the subjects.
- C- Evaluation phase: This phase was implemented for the intervention group using tool 2 and 3. This phase was performed 4 times; one day, one week, two weeks and one month after the surgery. Most of the subjects discharged home after one or two days after surgery. The protocol of follow up care after the

surgery was visiting the outpatient clinics every Saturday for follow up. The subsequent follow up data collection was performed in the outpatient’s clinic after arrangement with the subjects through phone calls.

The control group received the routine pre and post-operative nursing care of bariatric surgery provided by the hospital staff. They were assessed by the researchers one day, one and two weeks and one month after the surgery using tool 2 and 3 to collect data to compare with the intervention group.

III. Results

Socio-demographic characteristics of the study sample

Regarding control group, less than two third of the studied group (60%) were in the age group 31 to 40 years old, 20% were in the age group 41 to 50 years old and 15% were younger than 30 years old. Majority of the subjects (90%) were females. Sixty percent were married, 30% singles and small percent 5% were either widow or divorced. Fifty five percent were high school graduates and 45% were university graduates and similarly 55% were working and 45% were not working. Regarding place of residence, 60% were residence of urban areas and 40% from rural areas.

As for the intervention group, 60% were in the age group 31 to 40 years old, 20% in the age group 41 to 50 years old, while small percent (15%) were less than 30 years old. Most of the subjects (95%) were female, 60% were married, and 35% were singles. 60% were university graduates, 30% were high school graduates, and only 5% were either holding elementary school or read and write. Half of them (50%) were working and 55% were residence of urban areas and the rest in rural areas. Results of the socio-demographic characteristics of the control and intervention group are presented in table 1.

Table 1: Socio-demographic characteristics of the control and intervention group

	Control group (N = 20)		Intervention group (N = 20)	
	#	%	#	%
Age				
21 to 30	3	15	3	15
31 to 40	12	60	12	60
41 to 50	4	20	4	20
>50	1	5	1	5
Gender				
Male	2	10	1	5
Female	18	90	19	95
Marital status				
Single	6	30	7	35
Married	12	60	12	60
Divorced	1	5	-	5
Widow	1	5	1	-
Educational level				
Illiterate	0	0	0	0
Read and write	0	0	1	5
Elementary	0	0	1	5
High school/diploma	11	55	6	30
University	9	45	12	60
Occupation				
Working	11	55	10	50
Not working	9	45	10	50
Residence				
Urban	12	60	11	55
Rural	8	40	9	45

Health assessment

Regarding health assessment of the control group, table 2 presented that less than half (45%) of the subjects reported that they used to have 4 meals a day, 25% reported having either 3 or 5 meals per day while majority of them (85%) reported having snacks between meals and consume soft drinks. In addition, about two third (65%) of the participants were not exercising, and less than half of them (45%) were taking vitamin and dietary supplement. Regarding past medical history, the table illustrated that about two third (65%) of the subjects have no past medical history, 20% have hypertension and receive anti-hypertension medication and 15% have anemia with majority (80%) were receiving Iron supplement. Regarding BMI, majority of the participants (90%) have morbid obese and 10% were obese. Regarding the type of the surgery, most of the subjects (85%) have done sleeve gastrectomy while 15% underwent gastric bypass.

Concerning the intervention group, more than half (55%) and more than one third (35%) of the participants used to have either 3 or 4 meals per day respectively, about two third (65%) used to have snacks and consume soft drinks while only 30% of them used to exercise. Sixty percent takes vitamin and dietary supplements, iron and have no past medical history. Regarding past medical history; 15% were either having

hypertension or anemia and all participants in the intervention group have morbid obesity. Most of the participants (75%) have done sleeve gastrectomy, 15% have done gastric bypass and 10% have done Biliopancreatic Diversion with Duodenal switch (BPD/DS) surgeries. Results of health assessment data of the control and intervention group are presented in table 2.

Table 2: Health Assessment of control and intervention group

	Control group (N = 20)		Intervention group (N = 20)	
	#	%	#	%
Number of meals per day				
Less than 3 diets	1	5	0	0
3 Meals	5	25	11	55
4 Meals	9	45	7	35
5 Meals	5	25	2	10
More than 5	0	0	0	0
Snacks between meals				
Yes	17	85	13	65
No	3	15	7	35
Consume soft drinks				
Yes	17	85	13	65
No	3	15	7	35
Exercise				
Yes	7	35	6	30
No	13	65	14	70
Vitamins & dietary supplements				
Yes	9	45	12	60
No	11	55	8	40
Past medical history				
Anemia	3	15	3	15
Hypertension	4	20	3	15
Cardiac diseases	0	0	2	10
Others	0	0	0	0
Nothing	13	65	12	60
Current medication				
Calcium	0	0	5	25
Antihypertension	4	20	3	15
Iron	16	80	12	60
Others	0	0	0	0
BMI				
Under weight	0	0	0	0
Ideal	0	0	0	0
Over weight	0	0	0	0
Obese	2	10	0	0
Morbid obese	18	90	20	100
Type of surgery				
Sleeve gastrectomy	17	85	15	75
Gastric bypass	3	15	3	15
BPD/DS	0	0	2	10

Dumping syndrome in the control group:

Regarding dumping syndrome signs and symptoms experienced by participants post-bariatric surgery; result showed that half of them (50%) reported having nausea and vomiting first day and one week which were reduced to 40% after 2 weeks and after a month post the surgery.

Diarrhea was reported among small percent (15%) immediately after the operation, and one week later, and then reduced to be reported only among 10% 2 weeks and one month post the surgery. Lightheadedness and cold sweat were reported about the same (50%) throughout the time with little increase 2 weeks (60%) post-surgery.

Abdominal distension was fluctuating up and down from 45%, 50%, 35% and 50% on the first day, one week, two weeks and one month respectively post-operative. Heart burn was experienced among 35% in the first day then the incidence reported among 70% of the participants after one month from the operation.

Feeling fatigue was the same in the first 2 measurements (50%), which has been improved after 2 weeks (25%) then reported among majority (85%) after one month. Foul odor when breathing reported in about one quarter throughout the 4 occasions while presence of foam and bitter mouth experienced by 20%, 35%, 25%, and 20% of the subjects first day, one week, two weeks and one month respectively post-operative. Numbness in the lower limb was reported among 35% first day of operation, 40% after one week, 25% 2 weeks and one-month post-operative.

In addition, 100% showed stomach pain one day after the operation, and then slightly reduced in the following measurements. Constipation reported among more than one third throughout the study period.

Dumping syndrome in the intervention group:

Regarding signs and symptoms of dumping syndrome in the intervention group, 80% of the participants experienced nausea and vomiting first day after the operation compared to 20% one month after the educational intervention. Diarrhea was reported among 15% one day and one-week post-operative and elevated to be 35% two weeks and then decreased to small percent(5%)one month after bariatric surgery. Lightheadedness and cold sweats experienced by 40%, 25%, 25%, 25% and 10% one day, one week, two weeks and one month respectively post the educational intervention.

Abdominal distension reported among majority of the participants (90%) one day then disappeared within a week, compared to half of them (50%) 2 weeks and quarter (25%) one-month post operation. Heart burn was fluctuating up and down throughout the study period; 65%, 45%, 60% compared to noticeable reduction to 15% one-month post operation. Experience of feeling fatigue and dizzy was experienced by all participant one-day post-operative, then decreased to 65% and 45% and 30% in the following measurements.

Foul breath odor was experienced by majority and reduced over time; 70%, 60%, 45% and 0% respectively. Presence of foam and bitter mouth reported among 5%, 35%, 25% and 0% of the participant respectively. In addition, cramps and numbness in the lower limbs was reported by 15%, 50%, 0% and 5% of the subjects one day, one, two weeks and one month after the operation while stomach pain slightly was higher after one and 2 weeks then improved after one month. Constipation reported among more than half (60%) within the first week, then among 25% after 2 weeks while among 40% after a month. Results of dumping syndrome among control and intervention groups are presented in table 3.

Table 3: Number and percentages of reported dumping syndrome signs and symptoms after bariatric surgery among control and experimental groups

	One Day				One Week				Two Weeks				One Month			
	Control		Intervention		Control		Intervention		Control		Intervention		Control		Intervention	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Nausea/vomiting	10	50	13	80	10	50	11	55	8	40	15	75	8	40	4	20
Diarrhea	3	15	3	15	3	15	3	15	2	10	7	35	2	10	1	5
Light headedness/cold sweat	10	50	8	40	8	40	5	25	12	60	5	25	10	50	2	10
Abdominal distention	9	45	18	90	10	50	0	0	7	35	10	50	10	50	5	25
Heart burn	7	35	13	65	7	35	9	45	8	40	12	60	14	70	3	15
Fatigue/laziness	10	50	20	100	10	50	13	65	5	25	9	45	17	85	6	30
Foul breath odor	5	25	14	70	5	20	12	60	5	25	9	45	5	25	0	0
Foam & Bitter mouth	4	20	1	5	7	35	0	0	5	25	5	25	4	20	0	0
Cramp/numbness in lower limbs	7	35	3	15	8	40	10	50	5	25	0	0	5	25	1	5
Thrombolytic Stomach pain	20	100	1	5	17	85	4	20	13	75	6	30	16	80	3	15
Constipation	7	35	12	60	7	35	12	60	7	35	5	25	7	35	8	40

Anxiety level in the control group

Regarding anxiety level first day after the operation, results showed that most of the control group participants (80%) of the reported having severe anxiety while 20% of them have moderate anxiety in all the items of the Beck anxiety scale compared to most of them (80%), 10% mild and small percent (5%) who reported severe, moderate or not anxious at all respectively one week after the operation regarding all the items of anxiety scale. As for 2 weeks after the bariatric surgery, results revealed that less than half (40%) of the participants reported severe anxiety, 45% moderate, 10% mild and only small percent 5% were not at all anxious. Regarding anxiety one month after the operation, 40%, 25%, 20% and 15% of them subjects experienced severe, moderate, mild, and were not at all anxious respectively.

Anxiety level in the intervention group

Regarding anxiety level in the intervention group, results showed that most of the participants (75%) compared to about third (35%), less than fourth (20%) and small percent (15%) reported sever anxiety one day, one week, two weeks and one month after the operation respectively. The number of subjects who didn't experience any anxiety at all has been increased from 5%, to 10%, 25%, and 40% one day, one, two weeks and one month respectively after the operation.

Independent sample t-test was performed to examine differences among control and intervention group regarding anxiety at each time. Results showed that there were statistically significant differences between control and intervention group at two weeks ($t = 23.5, p = .02$) and one month ($t = 21.7, p = .003$) post-surgery meaning that intervention group presented lower anxiety than control group after 2 weeks and one month from the operation. Results of anxiety level among control and intervention groups are presented in table 4.

Table 4: Differences between control and intervention groups regarding anxiety level over the four-time measurements

	Control Group		Intervention Group		t	P	
	#	%	#	%			
One day	Not at all	0	0	1	5	19.91	.56
	Mild	0	0	0	0		
	Moderate	4	20	4	20		
	Sever	16	80	15	75		
One Week	Not at all	1	5	2	10	19.21	.38
	Mild	2	10	3	15		
	Moderate	1	5	8	40		
	Sever	16	80	7	35		
Two Weeks	Not at all	1	5	5	25	23.5	.02*
	Mild	2	10	5	25		
	Moderate	9	45	6	30		
	Sever	8	40	4	20		
One Month	Not at all	3	15	8	40	21.7	.003*
	Mild	4	20	3	15		
	Moderate	5	25	6	30		
	Sever	8	40	3	15		

Chi square test was performed to examine if there were any association between the type of surgery and the experience of dumping syndrome and anxiety by groups. Results indicated that there were no statistically significant relationship between the type of the surgery and the experience of dumping syndrome or anxiety at any of the 4 measurements as presented in table 5.

Table 5: Association between type of the surgery and dumping syndrome and anxiety level at the 4 measurements by groups

	Type of surgery			
	Control		Intervention	
	Dumping syndrome	Anxiety	Dumping syndrome	Anxiety
Day 1	X ² = 3.29 P = .12	X ² = 4.03 P = .44	X ² = 3.17 P = .72	X ² = 3.33 P = .45
One Week	X ² = 4.01 P = .30	X ² = 3.11 P = .25	X ² = 3.81 P = .33	X ² = 3.21 P = .11
Two weeks	X ² = 3.45 P = .10	X ² = 3.91 P = .33	X ² = 3.21 P = .34	X ² = 3.21 P = .52
One Month	X ² = 4.21 P = .71	X ² = 3.35 P = .61	X ² = 3.25 P = .76	X ² = 2.89 P = .21

IV. Discussion

Bariatric surgery has become a well recognised and effective intervention for obesity and has proved to reduce serious health and psychosocial consequences associated with obesity. Optimal patient outcomes after surgery rely heavily on the proper preoperative patients' education. Lack of instructions might affect achieving the goal of the surgery and compromise outcomes. The aim of the current study was to examine the effect of an educational intervention on physiological and psychological outcomes among patients undergoing bariatric surgeries.

Our study is the first to address effect of preoperative education on early physiological outcomes in terms of dumping syndrome among patients undergoing bariatric surgeries. Results showed that the symptoms of dumping syndrome were improved among the intervention group in the first two measurements (one day and one week after the operation), then were prevalence after 2 weeks with a noticeable improvement after one month. Reasons behind this result would be that in the first 2 weeks post-operative, foods are restricted to

fluids and semi solid to facilitate digestion and moving of the stomach contents into the intestine which in turn help avoiding dumping syndrome. After discharge and when patients allowed consuming more solid foods, dumping syndrome could be experienced especially among those who consume sugar-rich food, fats, and other type of restricted food for such operation. Our results showed obvious improvement in dumping syndrome signs and symptoms after one month among the intervention group. There were no available previous studies that addressed similar objectives like ours to compare our data with. Previous researches have postulated that preoperative education is effective in the management of many aspects postoperative such as reducing pain, postoperative analgesics, physical activity, recovery, decreased fatigue and overall satisfaction⁽¹⁸⁻²²⁾. Previous descriptive research indicated that symptoms of dumping syndrome are prevalence after bariatric surgeries and its management is depending on patient's modification of eating regimen⁽²³⁻²⁷⁾. Our study provided evidence that preoperative intervention regarding dumping syndrome signs and symptoms would effectively help patients avoid this most frequent gastrointestinal disorder after bariatric surgery.

Another aim of the current study was to examine the effect of the educational intervention on anxiety early after bariatric surgery. Participants showed reduced anxiety among the intervention group throughout the 4 measurements. The aim of the intervention in this study was to enhance the participants' awareness about anxiety after the operation to reduce anxiousness in the early postoperative period and faster recovery. Although, the effect of preoperative educational intervention on short-term psychological outcomes among patients undergoing bariatric surgeries is limited, studies have shown that preoperative education is effective in improving psychological outcomes. For instance, randomized controlled trials reported that intervention was effective in reducing anxiety shortly before and after the operation among patients undergoing surgical operations⁽²⁸⁻³⁰⁾, improved emotional reaction and anxiety after coronary artery bypass surgery (CABG) surgeries⁽³¹⁾. The published research reported that psychological quality of life, mental health and psychosocial status improved after bariatric surgeries⁽³²⁻³³⁾. Other long-term follow up research on anxiety after bariatric surgeries reported significantly decrease in anxiety symptom severity and frequency within one to two years later^(34, 35). These researches are different from our study in that they were descriptive and studied the long-term outcomes of weight reduction on depression and anxiety conditions. The present study provided educational intervention to enhance patients' level of anxiety early after the surgery and improve their psychological outcomes.

Results also indicated that there was no statistically significant association between the type of the surgery and experiencing of dumping syndrome and anxiety among the 2 groups. Whatever the type of the bariatric surgery, patients are at risk for experiencing some degree of dumping syndrome signs and symptoms and also prone to experience some levels of anxiety. Educational instructions are effective in reducing the prevalence of such negative outcomes.

Limitations and strength

Although, the current study is limited to convenience and small sample size, it is the first study to address effect of preoperative educational intervention on dumping syndrome and anxiety level after bariatric surgeries. Results of this study may have important implications for practitioners and health care providers who are dealing with bariatric surgeries patients.

V. Conclusion and Recommendations

Preoperative intervention has many positive effects on postoperative physiological and psychological outcomes for bariatric surgeries patients. Results from this study adds to the nursing body of knowledge by showing that providing preoperative intervention to a specific physiological and psychological component is associated with faster physical recovery and better psychological wellbeing. These findings have potential clinical implications that need to be considered by health care providers. Further research with larger sample and including of qualitative prospective would provide better explanation in this regard.

References

- [1]. Global prevalence of adult obesity - Country rankings 2010. Source: International Obesity Taskforce, International Association for the Study of Obesity www.allcountries.org/ranks/global_prevalence_of_adult_obesity.html.
- [2]. Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. www.cdc.gov/obesity/data/trends.html (2010).
- [3]. National Institutes of Health (2001): The Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) NIH Publication 01-3670.
- [4]. Sun SS, Liang R, Huang TT et al.(2008). Childhood obesity predicts adult metabolic syndrome: the Fels Longitudinal Study. *Journal of Pediatric*, 152:191-200.
- [5]. Morrison JA, Friedman LA, Wang P, Glueck CJ(2008): Metabolic syndrome in childhood predicts adult MS and type 2 diabetes mellitus 25 to 30 years later. *Journal of Pediatric*. 152:201-206.
- [6]. Sugerma HJ, DeMaria EJ, Kellum JM et al.(2004). Effects of bariatric surgery in older patients. *Annals of Surgery*, 240:243-247.

- [7]. Patton HM, Yates K, Unalp-Arida A et al.(2010). Association between metabolic syndrome and liver histology among children with non-alcoholic fatty liver disease. *American Journal of Gastroenterology*, 105:2093–2102.
- [8]. Wild RA, Carmina E, Diamanti-Kandarakis E et al.(2010). Assessment of cardiovascular risk and prevention of cardiovascular disease in women with the polycystic ovary syndrome: a position statement by the Androgen Excess and Polycystic Ovary Syndrome (AEPCOS) Society. *Journal of Clinical Endocrinologic Metabolism*, 95:2038– 2049.
- [9]. Davin SA and Taylor NM(2009). Comprehensive review of obesity and psychological considerations for treatment. *Psychological Health Medicine*, 14:716–725.
- [10]. Allen SR, Lawson L, Garcia V, Inge TH(2005): Attitudes of bariatric surgeons concerning adolescent bariatric surgery (ABS) *Obesity Surgery*, 15:1192–1195.
- [11]. Yermilov I, McGory ML, Shekelle PW, Ko CY, Maggard MA(2009). Appropriateness criteria for bariatric surgery: beyond the NIH guidelines. *Obesity*,17:1521–1527.
- [12]. Kehlet H, Wilmore DW. (2008). Evidence-based surgical care and the evolution of fast-track surgery. *Annals of Surgery*, 248(2):189–98
- [13]. Adams, T. D., Pendleton, R. C., Strong, M. B., Kolotkin, R. L., M, J., Litwin, S. E., et al. (2010). Health Outcomes of Gastric Bypass Patients Compared to Nonsurgical, Non-intervened Severely Obese. *Obesity*, 18(1), 121-130.
- [14]. Chang, C.-Y., Huang, C.-K., Chang, Y.-Y., Tai, C.-M., Lin, J.-T., & Wang, J.-D. (2010). Prospective study of health-related quality of life after Roux-en-Y bypass surgery for morbid obesity. *The British journal of surgery*, 97(10), 1541-1546.
- [15]. Kolotkin, R.L., Crosby, R.D., Gress, R.E., Hunt, S.C., & Adams, T.D. (2009). Two-year changes in health-related quality of life in gastric bypass patients compared with severely obese controls. *Surgery for obesity and related diseases*, 5(2), 250-256.
- [16]. Beck AT, Epstein N, Brown G, Steer RA. (1988). An inventory for measuring clinical anxiety: psychometric properties. *Journal of Consultation in Clinical Psychology*, 56(6):893-897.
- [17]. Itisha, C and Manu, S. (2016). Study on the Effect of Pre-Operative Patient Education on Post-Operative Outcomes. *International Journal of Medical and Health Sciences*, 10 (5).
- [18]. Barry, MA (2017). The Effect of Preoperative Education on Postoperative Pain After Joint Surgery: An Integrative Literature Review. *Creative Nursing*, 23(1):42-46.
- [19]. Onerup, A.,Angetete, E., Bock, D., Börjesson, M., Olsén, M., et al. (2017). The effect of pre- and post-operative physical activity on recovery after colorectal cancer surgery (PHYSSURG-C): study protocol for a randomized controlled trial. *Trials*, 18(1), 10.1186/s13063-017-1949-9.
- [20]. Chumbley, GM, Ward L, Hall GM, Salmon P (2004). Pre-operative information and patient controlled analgesia: much ado about nothing. *Anaesthesia*, 59(4), 354–358.
- [21]. Courneya, KS, Segal RJ, Gelmon K, et al. (2007). Six-month follow-up of patient-rated outcomes in a randomized controlled trial of exercise training during breast cancer chemotherapy. *Cancer Epidemiol Biomarkers Preview*, 16, 2572–2578.
- [22]. Padoin, A. V., GalvãoNeto, M., Moretto, M., Barancelli, F., Schroer, C. E., &Mottin, C. (2009). Obese patients with type 2 diabetes submitted to banded gastric bypass: greater 120 incidence of dumping syndrome. *Obesity surgery*, 19(11), 1481-1484.
- [23]. Potoczna, N, Harfmann S, Steffen R, Briggs R, Bieri N, Horber FF. (2008). Bowel habits after bariatric surgery. *Obesity Surgery*, 18(10):1287-1296.
- [24]. Wasserberg, N, Hamoui N, Petrone P, Crookes PF, Kaufman HS. (2008). Bowel habits after gastric bypass versus the duodenal switch operation. *Obesity Surgery*, 18(12), 1563-1566.
- [25]. Abell, TL, Minocha A. (2006). Gastrointestinal complications of bariatric surgery: diagnosis and therapy. *American Journal of Medical Science*, 331(4):214-218.
- [26]. Mechanick, JI, Kushner RF, Sugerman HJ, Gonzalez-Campoy JM., et al. (2009). American Association of Clinical Endocrinologists, The Obesity Society, and American Society for Metabolic & Bariatric Surgery medical guidelines for clinical practice for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient. *Obesity*, 17 Suppl 1:S1-70.
- [27]. Babae, G., Keshavarz, M., Hidamia, A. &Shayegan, M. (2007). Effect of a health education program on quality of life in patients undergoing coronary artery bypass surgery. *Acta MedicalIranica*, 45, 69-75.
- [28]. Kesanen, J.,Leino-Kilpi, H., Lund, T.,Montin, L.,Puukka, P. et al. (2017). Increased preoperative knowledge reduces surgery-related anxiety: A randomised clinical trial in 100 spinal stenosis patients. *European Spine Journal*, 26, 2520–2528.
- [29]. Lee, C.H., Liu, J.T., Lin, S.C., Hsu, T.Y., Lin, C.Y., Lin, L.Y. (2018). Effects of educational intervention on state anxiety and pain in people undergoing spinal surgery: A randomized controlled trial. *Pain Management Nursing*, 19, 163–171.
- [30]. Chuang, M.F., Tung, H.H, Clinciu, D.L, Huang, J.S, Iqbal, U., et al. (2016). The effect of an integrated education model on anxiety and uncertainty in patients undergoing cervical disc herniation surgery. *Computed Methods Prog. Biomedical*, 133, 17–23.
- [31]. Herpertz, S., Kielmann, R., Wolf, A. M., Langkafel, M., Senf, W., &Hebebrand, J. (2003). Does obesity surgery improve psychosocial functioning? A systematic review. *International Journal of Obesity*, 27, 1300-1314.
- [32]. Dixon, J. B., Dixon, M. E., & O'Brien, P. E. (2003). Depression in association with severe obesity. *Archives of Internal Medicine*, 16 (17), 2058-2065.
- [33]. Finks, J., Carlin, A., English, W., Giordani, B., Krause, K., Hawasli, A., &Birkmeyer, N. (2011). Prevalence of psychiatric disease among morbidly obese patients undergoing bariatric surgery: Results from the Michigan bariatric surgery collaborative. Paper presented at the 28th Annual Meeting of the American Society for Metabolic & Bariatric Surgery, Orlando, FL.
- [34]. Wolfe, B. L., & Terry, M. L. (2006). Expectations and outcomes with gastric bypass surgery. *Obesity surgery*, 16(12), 1622-1629.
- [35]. Karlsson, J., Taft, C., Rydén, a, Sjöström, L., & Sullivan, M. (2007). Ten-year trends in health-related quality of life after surgical and conventional treatment for severe obesity: the SOS intervention study. *International journal of obesity*, 31(8), 1248-1261.

Hanem F. Mohamed."The Effect of an Educational Intervention on Dumping Syndrome and Anxiety Level among Patients Undergoing Bariatric Surgery."IOSR Journal of Nursing and Health Science (IOSR-JNHS), vol. 8, no.03 , 2019, pp. 12-20.