Lifestyle Pattern Modification for Patients Post Bariatric Surgery

Zakia Atef Mohammed[١], Howyida Sadek Abd El-Hameed[٢], Hedya Fathy Mohy El-Deen[٣], Shimaa Gamal Eldein Ibraheim[٤]

(١) Assistant Lecturer of Community Health Nursing, (٢) Professor of Community Health Nursing, and (٣, ٤) Assistant Prof. of Community Health Nursing, Faculty of Nursing, Benha University.

Abstract

Background: Bariatric surgery has gained prominence over the past few decades as an effective intervention for managing morbid obesity and its associated comorbidities and serves as a powerful tool for weight control and health improvement. However, its success is not solely determined by the procedure itself but rather by the patient's commitment to adopting a new lifestyle pattern. **Aim of study:** Was to assess lifestyle pattern modification for patients post bariatric surgery. **Research design:** A descriptive research design was utilized to conduct this study. **Setting:** This study was conducted at Surgical Outpatient Clinic affliated to Benha University Hospital. **Sample:** Purposive sample of ٧٩ patients was used to conduct this study in the previously mentioned setting. **Tools:** Three tools were used to collect data in this study. **Tool I:** A structured interviewing questionnaire that included; socio-demographic characteristics, past history, anthropometric measurements of the patients with bariatric surgery, and knowledge of the patients regarding obesity and bariatric surgery. **Tool II:** Lifestyle pattern of the patients with bariatric surgery. **Tool III:** Attitude of the patients regarding bariatric surgery. **Results:** ٥٤.٤٪ of the studied patients had poor total knowledge level regarding obesity and bariatric surgery. ٦٩.٦٪ of the studied patients had unhealthy total lifestyle pattern level regarding bariatric surgery. ٧٤.٧٪ of the studied patients had negative total attitude level regarding bariatric surgery. **Conclusion:** There were highly statistically positive correlation between the studied patients' total knowledge, total lifestyle pattern, and total attitude (P<٠.٠٠١). **Recommendations:** Develop and implement health educational program for patients with bariatric surgery regarding their lifestyle pattern to ensure long-term success.

Keywords: Bariatric surgery, Lifestyle pattern modification, Patients.

Introduction:

Bariatric Surgery (BS) is currently the most effective treatment options for severe obesity that offering significantly greater Massive Weight Loss (MWL) compared to non-surgical interventions and reducing comorbidity burden and mortality rate among patients with severe morbid obesity. Bariatric surgery can be characterized by its rapidity, progression, and sustainability. Bariatric surgical procedures can alter the gastrointestinal anatomy and gut endocrine system that resulting in rapid post-operative improvements in glucose metabolism, diabetes, leptin sensitivity and appetite that may be occurred due to excessive weight gain **(Wilson et al., ٢٠٢٣).**

Bariatric surgery is the only treatment intervention that has substantial, long-term weight loss and medical benefits for the patients with severe morbid obesity. The incidence of BS has plateaued at approximately ٨٣٣,٦٨٧ surgical procedures worldwide. The Bariatric Analysis and Reporting Outcome System (BAROS) outlines three main areas for assessment of successful bariatric surgery which are; percentage of excess weight lost, change in medical conditions, and Quality of Life (QoL) which is widely accepted as the perception of one's position in life, relative to culture and value systems, while considering goals, expectations, standards and concerns **(Summerville et al., ٢٠٢٣; Azhri et al., ٢٠٢٣).**

Several benefits of bariatric surgery include; BS is highly effective for the patients who have obesity and type ٢ diabetes that allowing almost all patients to remain free of insulin and other related medications for at least three years after surgery, the bariatric surgery decreases a person's risk of coronary heart disease, stroke and peripheral heart disease. Plus, bariatric surgical procedures can help prevent the risk of death associated with stroke, hypertension and myocardial infarction that result in improving overall health. Moreover bariatric surgery helps in relieving of depression which meaning that the patients who underwent bariatric surgery had a ٣٢.٧٪ decrease in depression rates at the time of bariatric surgery and a ١٦.٥٪ decrease in depression from six to ١٢ months after surgery **(Jabbour & Salman, ٢٠٢١).**

The bariatric surgical procedures could be associated with more devastating complications, some of which may be fatal if not addressed and managed quickly. These complications can be classified as early complications which can include excessive bleeding, infection, reactions to anesthesia, venous thromboembolic events, lung or breathing problems, anastomotic leakage, while late complications can vary depending on the type of surgery that include bowel obstruction, vomiting, dumping syndrome, gallstones, marginal ulcer, hypoglycemia, malnutrition, vitamin and mineral deficiencies, acid reflux, gastroesophageal reflux disease, loose skin, osteoporosis, weight regain, the need for a second surgery called a revision, and rarely death **(Gulinac et al., ٢٠٢٣).**

Lifestyle pattern is distinguished as a dynamic interaction among factors that can help maintain or improve the bariatric surgery patients' health and well-being. A healthy lifestyle pattern is a more valuable resource for reducing/limiting the incidence and impact of health problems which could be associated with bariatric surgical procedures. Modification of lifestyle patterns is the gold-standard support which can play an important role in the success of bariatric surgical procedures. Patients undergoing bariatric surgery are required to adhere and commit to healthy lifestyle practices after surgery that include; following specific eating and drinking behaviors, exercising regularly, taking medications and vitamin supplements daily, stopping smoking, managing stress, and attending follow-up medical appointments for regular monitoring of glycaemic control, blood lipid profile, obstructive sleep apnea and other obesity-related health conditions **(Saleh & Mansour, ٢٠٢٢).**

Bariatric surgery is broadly favored intervention for achieving substantial weight loss which offers advantages as resolving or alleviating associated comorbidities, enhancing quality of life, and ensuring sustainable long-term weight management, however some bariatric surgery can be accompanied by other related metabolic complications due to the bariatric patients didn't comply with the recommended guidelines of lifestyle pattern modification post-operatively that can impede the successful of surgery. Consequently, the possible important predictor of weight loss after bariatric surgery and its success is adherence to the post-surgery behavioral guidelines especially during the first post-operative years **(El-Maghawry, et al., ٢٠٢١).**

Community Health Nurses (CHNs) have an important role in multidisciplinary management of bariatric surgery patients, and have a favorable impact on patient outcomes. CHNs should give support for patients to follow the new lifestyle instructions, and discuss with the patients any new medication dosing time and arrange a follow-up. In order to provide continuity of care for bariatric surgery patients after discharge, CHNs need to consider what

type of assistance bariatric surgery patient requires in the home setting according to the individual needs. CHNs should educate patients regarding essential knowledge and self-care management including the effects and impacts of such surgery on health status, and the essential management measures in the case of arising health hazards **(Musendeki, ٢٠٢٢).**

Significance of the study:

Bariatric surgery is a relatively evolving and effective intervention in morbid obese patients for more than a decade. BS is designed to alter and interrupt the digestion process so that food isn't broken down and absorbed in the usual way, which results in a greater and more durable weight loss than the best available non-surgical interventions for obesity regardless of the type bariatric procedures used, and reduces the risk of mortality rate by ٥١٪. Popularity of BS interventions is increasing widely in Egypt now as a method of treating morbid obesity as ١١,٤٣٤ patients had performed BS. Of these, ٤٨.٢٪ underwent Sleeve Gastrectomy (SG), ٢٩.١٪ had Roux-en-Y Gastric Bypass (RYGB), ٨.٦٪ had done One-Anastomosis Gastric Bypass (OAGB), and ١٤.١٪ had performed revisional bariatric surgeries **(Hany et al., ٢٠٢٣).** So that it is very important to assess lifestyle pattern modification for patients post bariatric surgery.

Aim of the study:

The aim of this study was to assess lifestyle pattern modification for patients post bariatric surgery.

Research questions:

١. What is the knowledge of patients regarding obesity and bariatric surgery?
٢. What is the lifestyle pattern of patients with bariatric surgery?
٣. What is the attitude of patients regarding bariatric surgery?
٤. Is there a correlation between the patients' knowledge, lifestyle pattern, and attitude regarding bariatric surgery?

Subjects and methods:

Research design:

A descriptive research design was utilized to conduct this study.

Setting-:

This study was conducted at Surgical Outpatient Clinic affliated to Benha University Hospital.

Sampling:-

Purposive sample of ٧٩ patients was used to conduct this study in the previously mentioned setting, according to the following criteria:-

- Patients aged from ٢٠ to ٥٠ years old.
- Patients free from chronic medical disorders.
- Patients accepted to participate in the study.

Tools of data collection:

Three tools were used in this study:

Tool I: A structured interviewing questionnaire that included four parts:

Part I: It was concerned with socio-demographic characteristics of the patients with bariatric surgery which included ٧ closed ended questions.

Part II: It was concerned with past history of the patients with bariatric surgery:-

(A): Past medical history which included ٨ questions.

(B): Past surgical history which included ٧ questions.

Part III: It was concerned with anthropometric measurements of the studied patients with bariatric surgery which included ٣ items.

Part IV: It was concerned with knowledge of the studied patients:

(A): Knowledge regarding obesity which included ١١ questions.

(B): Knowledge regarding bariatric surgery which included ١٠ questions.

Scoring system:

Scoring system is graded according to the items of questionnaire. The scoring system for the studied patients' knowledge regarding obesity and bariatric surgery was calculated as follows (٢) scores for complete correct answer,

(١) score for incomplete correct answer and (٠) for don't know. For each area of knowledge, the score of the questions was summed-up and the total divided by the number of the questions, which converted into a percent score. The total knowledge scores were calculated and ranged from (٠-٤٢) which further categorized:

-Good→ if the total score of knowledge was >٧٥٪ (>٣٢ point).

-Average→ if the total score equals ٥٠-٧٥٪ (٢١-٣٢ point).

-Poor→ if total score was <٥٠٪ (<٢١ point).

Tool II:- Lifestyle pattern of the studied patients with bariatric surgery adapted from **(Aboulkhair et al., ٢٠٢٢),** and was modified by the researcher. It was divided into ٧ categories; wound care, nutritional practices, physical activity and exercise, sleep and rest, stress management, weight check after bariatric surgery, and follow-up and treatment. These categories consisted of ٦٠ items.

Scoring system:

Scoring system is graded according to the items of questionnaire. The scoring system for the studied patients' lifestyle pattern was calculated as (١) score for done and (٠) for not done. For each area of lifestyle pattern, the score of the questions was summed-up and the total divided by the number of the questions, which converted into a percent score. The total lifestyle pattern scores were calculated and ranged from (٠-٦٠) which further categorized:

-Healthy→ if the total score of lifestyle pattern was >٨٠% (>٤٨ point).

-Unhealthy→ if the score was ≤٨٠٪ (≤٤٨ point).

Tool III:- Attitude of the studied patients regarding bariatric surgery; using likert scale adapted from **(Albogami et al., ٢٠٢١),** and was modified by the researcher. It included ٢٥ items.

Scoring system:

Scoring system is graded according to the items of questionnaire. The scoring system for the patients' attitude regarding bariatric surgery was calculated as (٢) scores for agree, (١) score for neutral and (٠) for disagree. For each area of attitude, the score of the questions was summed-up and the total divided by the number of the questions, which converted into a percent score. The total attitude scores were calculated and ranged from (٠-٥٠) which further categorized:

-Positive→ if the total score of attitude was >٦٠% (>٣٠ point).

-Negative→ if the score was ≤٦٠٪ (≤٣٠ point).

Content validity of the tool:

The tools validity was done by five members Faculty's Staff Nursing-Benha University Experts from the Community Health Nursing Specialties who reviewed the tools for clarity, relevance, comprehensiveness, applicability and easiness for implementation and according to their opinion minor modifications were carried out.

Reliability of the tool:

Reliability of the tool was applied by the researcher for testing the internal consistency of the tool, by administration of the same tools to the same subjects under similar condition on one or more occasion. Answers from repeated testing were compared (test-re-test reliability). The reliability was done by Cronbach's Alpha coefficient test that developed by Lee Cronbach in ١٩٥١which revealed that each of the three tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool. The internal consistency of the knowledge was ٠.٩١, while lifestyle pattern were ٠.٩٤, and attitude was ٠.٨٩.

Ethical considerations:

Written approval consent from the Scientific Research Ethical Committee, Faculty of Nursing, Benha University was obtained. Also approval and informed written consent has been obtained from all studied patients before conducting the interview and given them a brief

orientation to the purpose of the study. Patients were also reassured that all information gathered would be confidentially and used only for the purpose of the study. No names were required on the forms to ensure anonymity and confidentiality. The patients had right to withdraw from the study at any time without giving any reasons. Ethics, values, beliefs and culture were respected. The data collected were stored in confidential manner.

Preparatory phase:

Preparation of the study design and data collection tools was based on extensive review of the current and past available national and international references related to the research title, using a journal, textbooks and internet search to contrast the tools. This was necessary for the researcher to be acquainted with and oriented about aspects of the research problem as well as to assist in the development of data collection tools. Also prepared handout for studied patients that included all items about bariatric surgery, this took about two months for preparing the tools.

Pilot study:

A pilot study was carried out to ascertain the clarity and applicability of the study tools representing ١٠٪ of total study subjects. The pilot study was conducted on (٨) patients. The pilot study was aimed to test the content, clarity, applicability and simplicity of the tool using the interviewing questionnaire. The estimation of the time needed to fill the questionnaire consumed about ٣٠-٤٥ minutes. No modifications were done, so the pilot study sample was included in the study main subjects.

Field work:

The actual field work was carried out at ٦ months from the beginning of April ٢٠٢٤ to the end of September ٢٠٢٤. The study was conducted by the researcher for the studied sample in the selected setting of Surgical Outpatient Clinic affliated to Benha University Hospital. The researcher visited Surgical Outpatient Clinic two days/week (Saturday and Tuesday) from ٩:٠٠ am to ١٢:٠٠ mid-day. The researcher chose these days because increase the frequency of patients in these days and these days appropriate for researcher. During the frequent visit at Surgical Outpatient Clinic, the researcher introduced herself and explained the purpose of the study research briefly to patients who fulfilled the inclusion criteria. Each patient was individually interviewed in the waiting area of the Outpatient Clinic. The average time needed for the sheet was around ٣٠-٤٥ minutes to be filled, the average number of responses was ranged between ١-٢ patients/day depending on the responses of patients. The researcher assured patients to feel free for contacts through the telephone call or via WhatsApp chatting for answering patients' questions, or responding to the studied patients' inquiries in the event of a problem.

Statistical design:

All data collected were organized, tabulated and analyzed using appropriate statistical test. Data were analyzed by using Statistical Package for Social Science (SPSS) version ٢١ which was applied to calculate frequencies and percentage for qualitative descriptive data, mean and standard deviation was used for quantitative data, as well as test statistical significance and associations by using correlation matrix to detect the relation between the variables (P-value). **Significance levels were considered as follows:**

-Highly statistically significant P<٠.٠٠١**
-Statistically significant P<٠.٠٥*
-Not significant P>٠.٠٥

Results:

Table (١): Illustrates that; ٤٨.١٪ of the studied patients were aged from ٣٠ to less than ٤٠ years old with mean and standard deviation was ٣٤.٨٨٦±٧.٩٨٤. Regarding to sex, ٧٨.٥٪ of the studied patients were females, ٤١.٨٪ of them were married, ٥٤.٤٪ of them had university education or more, ٦٢٪ of them were working,

٦٩.٦٪ of them were living in urban area, and ٥٩.٥٪ of them had enough monthly income.

Table (٢): Shows that; ٨٢.٣٪ of the studied patients were not smoking, ٧٣.٤٪ of them suffered from obesity since childhood, ٥٨.٢٪ & ٥٤.٣٪ of them had family history of obesity that was first degree of kinship respectively, ١٠٠٪ & ٤٦.٨٪ of them had followed a previous weight loss program before bariatric surgery which was medicinal herbs respectively, and ٧٤.٧٪ of them reported that the previous weight loss program was ineffective.

Table (٣): Illustrates that; ٥١.٩٪, ٣٩٪ & ٤٨.٨٪ of the studied patients had performed previous surgery that was umbilical or inguinal hernia since less than ٥ years respectively. Regarding previous bariatric surgeries; ٧٧.٢٪ of the studied patients had not performed previous bariatric surgeries, while ٢٢.٨٪, ٣٣.٣٪ & ٧٧.٨٪ of them had performed previous bariatric surgery which was sleeve gastrectomy from ٢-٣ years respectively. Concerning follow-up appointments at the Outpatient Clinic for patients that had performed previous bariatric surgeries; ٥٠٪ of the patients had follow-up appointments every week.

Table (٤): Clears that; the mean of the studied patients' weight was ١٢٧.٧٨±٦.٧٩, while the mean of the studied patients' height was ١٧٣.٣٥±٧.٢٠ and the mean of the studied patients' BMI was ٤٢.٥٧±١.٥٣.

Figure (١): Shows that; ٥٤.٤٪ of the studied patients had poor total knowledge level regarding obesity and bariatric surgery, ٣٠.٤٪ of them had average total knowledge level regarding obesity and bariatric surgery, while only ١٥.٢٪ of them had good total knowledge level regarding obesity and bariatric surgery.

Figure (٢): Shows that; ٦٩.٦٪ of the studied patients had unhealthy total lifestyle pattern level regarding bariatric surgery, while ٣٠.٤٪ of them had healthy total lifestyle pattern level regarding bariatric surgery

Figure (٣): Illustrates that; ٧٤.٧٪ of the studied patients had negative total attitude level regarding bariatric surgery, while ٢٥.٣٪ of them had positive total attitude level regarding bariatric surgery.

Table (٥): Clears that; there were highly statistically positive correlation between the studied patients' total knowledge, total lifestyle pattern, and total attitude (P<٠.٠٠١).

Table (١): Distribution of the studied patients regarding their socio-demographic characteristics (n=٧٩).

Socio-demographic characteristics	No.	%
Age/years		
٢٠ < ٣٠ years	٢٥	٣١.٦
٣٠ < ٤٠ years	٣٨	**٤٨.١**
٤٠-٥٠ years	١٦	٢٠.٣
Mean±SD	**٣٤.٨٨٦±٧.٩٨٤**	
Sex		
Male	١٧	٢١.٥
Female	٦٢	**٧٨.٥**
Marital status		
Single	٢١	٢٦.٦
Married	٣٣	**٤١.٨**
Divorced	١٧	٢١.٥
Widowed	٨	١٠.١
Educational level		
Can't read and write	١١	١٣.٩
Basic education	١٩	٢٤.١
Intermediate education	٦	٧.٦
University education or more	٤٣	**٥٤.٤**
Occupational status		
Working	٤٩	**٦٢.٠**
Not working	٣٠	٣٨.٠
Place of residence		
Urban	٥٥	**٦٩.٦**
Rural	٢٤	٣٠.٤
Monthly income		
Enough and save	٢٢	٢٧.٨
Enough	٤٧	**٥٩.٥**
Not enough	١٠	١٢.٧

Table (٢): Distribution of the studied patients regarding their past medical history (n=٧٩).

Past medical history	No.	%
Smoking		
Yes	١٤	١٧.٧
No	٦٥	**٨٢.٣**
Number of packets smoked/day (n=١٤)		
١ packet/day	٩	**٦٤.٣**
٢-٣ packets/day	٣	٢١.٤
More than ٣ packets/day	٢	١٤.٣
Suffering from obesity		
Since childhood	٥٨	**٧٣.٤**
Recently	٢١	٢٦.٦
Having family history of obesity		
Yes	٤٦	**٥٨.٢**
No	٣٣	٤١.٨
***If answer is yes, what is the degree of kinship? (n=٤٦)**		
First degree	٢٥	**٥٤.٣**
Second degree	١٧	٣٧.٠
Third degree	١٠	٢١.٧
Fourth degree	٨	١٧.٤
Following a previous weight loss program before bariatric surgery.		
Yes	٧٩	**١٠٠.٠**
***If answer is yes, what is the type of a previous weight loss program used/followed to lose excess weight? (n=٧٩)**		
Diet for weight loss	٣١	٣٩.٢
Exercise	٢٤	٣٠.٤
Medicinal herbs	٣٧	**٤٦.٨**
Outcomes of the previous weight loss program followed to lose excess weight (n=٧٩)		
Somewhat effective	٢٠	٢٥.٣
Ineffective	٥٩	**٧٤.٧**

Table (٣): Distribution of the studied patients regarding their past surgical history (n=٧٩)

Past surgical history	No.	%
Performing previous surgeries		
Yes	٤١	**٥١.٩**
No	٣٨	٤٨.١
If answer is yes, what is the type of previous surgeries that had been performed? (n=٤١)		
Appendectomy	١٠	٢٤.٤
Cholecystectomy	١١	٢٦.٨
Umbilical or inguinal hernia	١٦	**٣٩.٠**
Thyroidectomy	٤	٩.٨
If answer is yes, what is the duration of previous surgeries that had been performed? (n=٤١)		
Less than ٥ years	٢٠	**٤٨.٨**
From ٥ to less than ١٠ years	١٤	٣٤.١
More than or equal ١٠ years	٧	١٧.١
Performing previous bariatric surgeries		
Yes	١٨	٢٢.٨
No	٦١	**٧٧.٢**
If answer is yes, what is the type of previous bariatric surgeries that had been performed to treat obesity? (n=١٨)		
Sleeve gastrectomy	٦	**٣٣.٣**
Adjustable gastric banding	٥	٢٧.٨
Vertical banded gastroplasty	٣	١٦.٧
Roux-en Y gastric bypass	٢	١١.١
Biliopancreatic diversion with duodenal switch	٢	١١.١
If answer is yes, what is the time of previous bariatric surgeries that had been performed to treat obesity? (n=١٨)		
٢-٣ years	١٤	**٧٧.٨**
More than ٣ years	٤	٢٢.٢
Follow-up appointments at the Outpatient Clinic to monitor the effects of the previous bariatric surgeries (n=١٨)		
Every week	٩	**٥٠.٠**
Every two weeks	٦	٣٣.٣
Every month	٣	١٦.٧

Table (٤): Mean and standard deviation of the studied patients regarding their anthropometric measurements (n=٧٩).

Anthropometric measurements	Min	Max	Mean±SD
Weight (kg)	١١٨.٠٠	١٣٧.٠٠	١٢٧.٧٨±٦.٧٩
Height (cm)	١٦٢.٠٠	١٨٥.٠٠	١٧٣.٣٥±٧.٢٠
BMI (kg/m^{٢})	٤٠.٠٣	٤٤.٩٦	٤٢.٥٧±١.٥٣

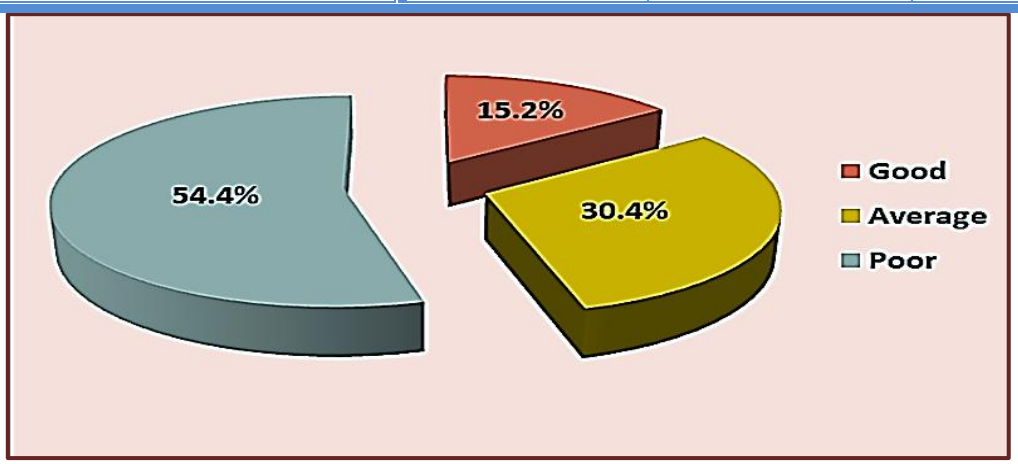

Figure (١): Percentage distribution of the studied patients regarding their total knowledge level about obesity and bariatric surgery (n=٧٩).

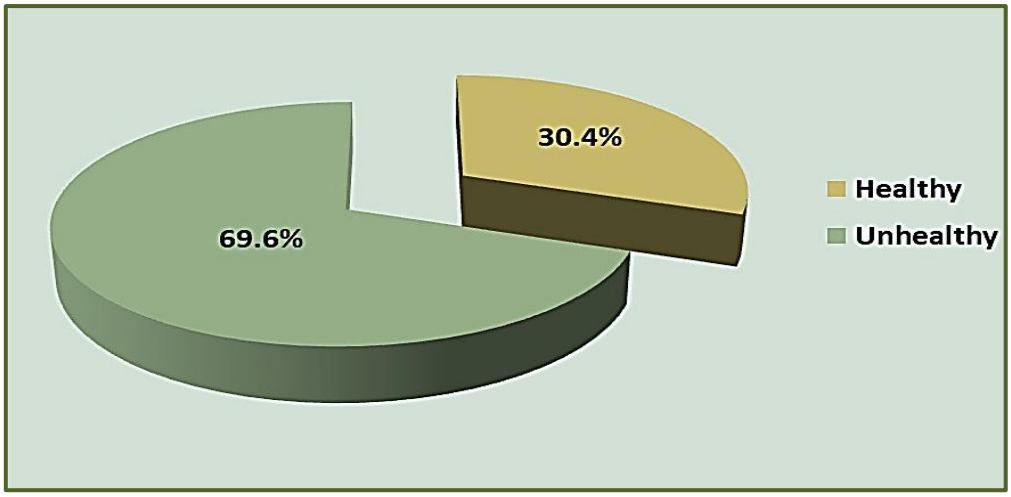

Figure (٢): Percentage distribution of the studied patients about their total lifestyle pattern level regarding bariatric surgery (n=٧٩).

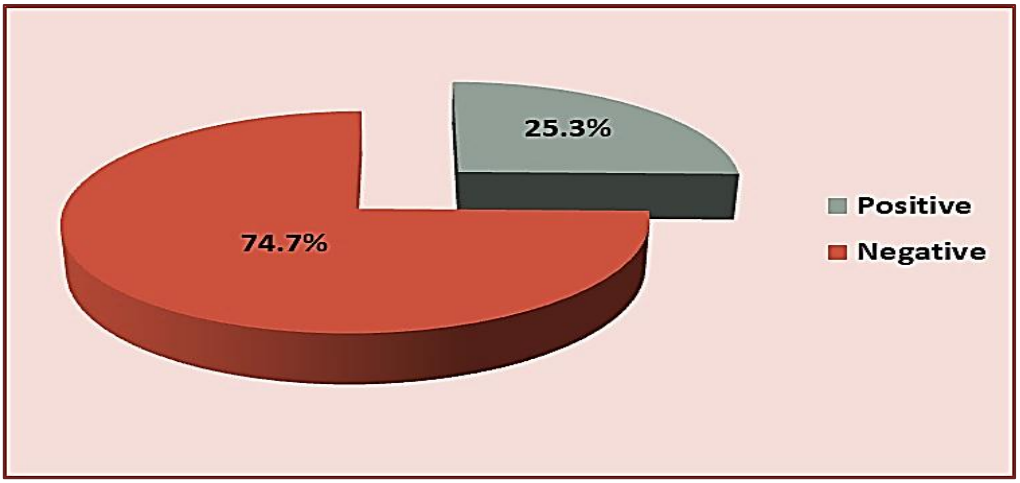

Figure (٣): Percentage distribution of the studied patients about their total attitude level regarding bariatric surgery (n=٧٩).

Table (٥): Correlation matrix between total knowledge, total lifestyle pattern, and total attitude of the studied patients (n=٧٩).

Items		Total knowledge	Total lifestyle pattern	Total attitude
Total knowledge	r	١	.٨٠١	.٧٨٥
	P-value	-	.٠٠٠**	.٠٠٠**
Total lifestyle pattern	r	.٨٠١	١	.٨٨١
	P-value	.٠٠٠**	-	.٠٠٠**
Total attitude	r	.٧٨٥	.٨٨١	١
	P-value	.٠٠٠**	.٠٠٠**	-

Discussion:

Bariatric surgery is a term used for the surgical treatment of severe overweight or morbid obesity that includes several surgical procedures commonly divided into three main types; restrictive, malabsorptive, or combined surgical procedures. Bariatric surgery aims to induce long-term weight loss and improve quality of life with a reduction in the risk of

obesity-associated mortality rate. Additionally the psychological benefits of bariatric surgery include remission of depression and anxiety symptoms. The bariatric surgery is frequently used for the patients where the traditional weight loss approaches have proven insufficient, or when morbid obesity already significantly affects well-being and general health of the patients **(Khalil et al., ٢٠٢٣).**

Regarding socio-demographic characteristics of the studied patients, the present study findings illustrated that; less than half of the studied patients were aged from ٣٠ to less than ٤٠ years old with mean and standard deviation was ٣٤.٨٨٦±٧.٩٨٤. This finding disagreed with the study performed by **Alrashid et al., (٢٠٢٢),** who studied "Current status of bariatric surgery perceptions in Hail region, in Saudi Arabia", (n=٤٠٠), and found that; ٧٦٪ of the studied patients were aged from ١٥ to ٣٠ years old.

Concerning sex of the studied patients, the present study findings illustrated that; more than three quarters of the studied patients were females. This finding agreed with the study performed by **Wawrzyniak & Krotki, (٢٠٢٢),** who studied "Environmental factors determining Body Mass Index (BMI) within ٩ months of therapy post bariatric surgery, in Poland", (n=٣٠), and found that; ٨٠٪ of the studied patients were females.

Regarding marital status of the studied patients, the present study findings illustrated that; two fifth of the studied patients were married. This finding was in the same harmony with the study performed by **Zhu et al., (٢٠٢١),** who studied "Development and validation of a questionnaire to assess the determinants of dietary adherence among patients after bariatric surgery, in China", (n=٣١٩), and found that; ٥٨.٩٣٪ of the studied patients were married.

Concerning educational level of the studied patients, the present study findings illustrated that; more than half of the studied patients had university education or more. This finding came inconsistent with the study performed by **Elsayed et al., (٢٠٢١),** who studied "Assessment of compliance for postoperative patients with bariatric surgery, in Egypt", (n=١٠٤), and found that; ٤٩٪ of studied patients had diploma education.

Regarding occupational status of the studied patients, the present study findings illustrated that; more than three fifth of the studied patients were working. This finding came inconsistent with the study performed by **Abd El-Naby & Elmetwaly, (٢٠٢٣),** who studied "Patients' expectations and satisfactions following bariatric surgeries, in Egypt", (n=٥٣), and found that; ٦٧.٩٪ of the studied patients were not working.

Concerning residence place of the studied patients, the present study findings illustrated that; more than two thirds of the studied patients were living in urban area. This finding agreed with the study performed by **Dalboh et al., (٢٠٢٢),** who studied "Awareness about complications of bariatric surgery among general population in Aseer Region, in Saudi Arabia", (n=٩٣٠), and found that; ٦٤.٥٪ of the studied patients were living in urban area.

Regarding monthly income of the studied patients, the present study findings illustrated that; slightly less than three fifth of the studied patients had enough monthly income. This finding was incongruent with the study performed by **Alnajjar et al., (٢٠٢٣),** who studied "The remission rate, metabolic changes, and quality of life assessment among patients with type ٢ diabetes post-bariatric surgery in Riyadh, in Saudi Arabi", (n=٢٣٢), and found that; ٤٦.٣٪ of the studied patients had enough and save monthly income.

Regarding past medical history, the present study findings showed that; majority of the studied patients were not smoking. This finding was incongruent with the study performed by

Almaghrbi et al., (٢٠٢٤), who studied "Association between dietary pattern, weight loss, and diabetes among adults with a history of bariatric surgery, in Qatar", (n=١٨٩٣), and found that; ٦٣.٣٪ of the studied patients were not smoking. This might be due to the patients who are aware of their obesity and its associated health risks may avoid smoking to prevent further health complications.

Furthermore the present study findings showed that; less than three quarters of the studied patients suffered from obesity since childhood. This finding disagreed with the study performed by **Rabah et al., (٢٠٢٣),** who studied "Desire for body contouring surgery after bariatric surgery, in Saudi Arabia", (n=٤١٠), and found that; ٦٩.٨٪ of the studied patients suffered from obesity at adulthood. This might be due to the genetic predisposition factor that plays a more significant role in obesity can increase a child's risk of becoming obese.

Moreover the present study findings showed that; less than three fifth & more than half of the studied patients had family history of obesity that was first degree of kinship respectively. These findings were incongruent with the study performed by **Altaheri et al., (٢٠٢١),** who studied "Effect of psycho-educational intervention for obese women post bariatric surgery on body image and self-esteem, in Egypt", (n=٤٠), and found that; ٦٢.٥٪ of the studied patients didn't have family history of obesity. This might be due to the genetic factors can be passed down if obesity-related genes are present in the family which can increase the likelihood of obesity in family members.

Also the present study findings showed that; all & less than half of the studied patients had followed a previous weight loss program before bariatric surgery which was medicinal herbs respectively. These findings came inconsistent with the study performed by **El-Attar & El-Emary, (٢٠٢٢),** who studied "Effectiveness of nursing intervention program on body image, marital satisfaction and quality of life among women post bariatric surgery, in Egypt", (n=٥٠), and found that; ٩٠٪ & ٤٠٪ of the patients had performed previous behavioral approaches for weight management which was diet and exercise respectively. This might be due to the medicinal herbs that are considered as a part of the weight loss program can complement other lifestyle changes as a balanced diet and regular exercise which may result in more sustainable weight loss and improved overall health.

Additionally the present study findings showed that; three quarters of the studied patients reported that the previous weight loss program was ineffective. This finding came inconsistent with the study performed by **Taha & Ali, (٢٠٢٢),** who studied "Effectiveness of combined exercise and nutritional-behavioral intervention on health outcomes among patients with bariatric surgery, in Egypt", (n=٦٠), and found that; ٩٣.٣٪ of the studied patients reported that the outcome of the previous weight loss program was ineffective. This might be due to the pre-operative weight loss interventions may not be tailored to the individual patients' needs which result in reducing their effectiveness.

Concerning past surgical history, the present study findings illustrated that; more than half, slightly less than two fifth & less than half of the studied patients had performed previous surgery that was umbilical or inguinal hernia since less than ٥ years respectively. These findings came inconsistent with the study performed by **Azhri et al., (٢٠٢٣),** who studied "Factors influencing body weight one year after bariatric surgery, in Saudi Arabia", (n=١٦٢), and found that; ٨٦.٤٪ of the patients didn't perform any surgical procedures. This might be due to severe morbid obesity can lead to higher intra-abdominal pressure that may weaken the

abdominal wall and increase the likelihood of hernias such as umbilical or inguinal hernias.

Moreover the present study findings illustrated that; more than three quarters of the studied patients had not performed previous bariatric surgeries. This finding was in the same line with the study performed by **Salem et al., (٢٠٢٤),** who studied "Effect of structured teaching program on physiological and psychological problems among post-bariatric surgery patients, in Egypt", (n=١٠٠), and found that; ٦٣٪ of the studied patients had not performed previous bariatric surgeries. This might be due to some patients may have more previous underlying serious health conditions that prevent them from undergoing bariatric surgery or the patients might not be fully informed about the bariatric surgery as a treatment option for obesity.

Additionally the present study findings illustrated that; less than one quarter, one third & more than three quarters of the studied patients had performed previous bariatric surgery which was sleeve gastrectomy from ٢-٣ years respectively. These findings were incongruent with the study performed by **Mohammed et al., (٢٠٢٢),** who studied "Quality of life before and after bariatric surgery among obese patients in Minia City, in Egypt", (n=١٨٢), and found that; ١٠٠٪ of the patients had performed previous bariatric surgery; ٥٥٪ of them underwent biliopancreatic diversion with duodenal switch, ٢٩٪ of them underwent sleeve gastrectomy, and ١٦٪ of them underwent gastric bypass. This might be due to the bariatric surgery is often recommended for the patients who unable to maintain significant weight loss to improve their quality of life.

Concerning follow-up appointments at the Outpatient Clinic for patients that had performed previous bariatric surgeries; the present study findings illustrated that; half of the studied patients had follow-up appointments every week. This finding was in the same line with the study performed by **Hany et al., (٢٠٢٢),** who studied "A cross-sectional survey of patients attending follow-up visits after sleeve gastrectomy, in Egypt", (n=١٨٢), and found that; ٦٠.٧٪ of the studied patients had follow-up appointments after the previous bariatric surgery every week. This might be due to regular follow-up appointments help track weight loss progress and ensure that the bariatric patients are on the right path to achieving their health goals.

Regarding anthropometric measurements of the studied patients with bariatric surgery, the present study findings cleared that; the mean of the studied patients' weight was ١٢٧.٧٨±٦.٧٩. This finding was in the same line with the study performed by **Mendoza et al., (٢٠٢١),** who studied "Malnutrition and alcohol in patients presenting with severe complications of cirrhosis after laparoscopic bariatric surgery, in Switzerland", (n=١٧), and found that; the mean of the studied patients' weight was ١٢٧.٠±٢٣.٢. This might be due to the behavioral counseling and support can help the bariatric patients adopt healthier lifestyle habits that contributed to the observed changes in their weight.

Furthermore the present study findings cleared that; the mean of the studied patients' height was ١٧٣.٣٥±٧.٢٠. This finding was in the same line with the study performed by **Baheeg et al., (٢٠٢١),** who studied "Long-term durability of weight loss after bariatric surgery, in Egypt", (n=١٠٠), and found that; the mean of the studied patients' height was ١٧٦.١٠±٥.١٤٤. This might be due to the mean height of ١٧٣.٣٥±٧.٢٠ among the studied patients with bariatric surgery reflects the characteristics of the specific study population.

Additionally the present study findings cleared that; the mean of the studied patients' BMI was ٤٢.٥٧±١.٥٣. This finding was congruent with the study performed by

Lautenbach et al., (٢٠٢٢), who studied "The potential of semaglutide once-weekly in patients without type ٢ diabetes with weight regain or insufficient weight loss after bariatric surgery, in Germany", (n=٤٤), and found that; the mean of the studied patients' BMI was ٤٩.٤±٨.٩. This might be due to the personalized care and continuous ongoing monitoring can be provided which may contribute to better adherence to the prescribed regimen and more significant changes in BMI.

Regarding the studied patients' total knowledge level about obesity and bariatric surgery, the present study findings showed that; more than half of the studied patients had poor total knowledge level regarding obesity and bariatric surgery, less than one third of them had average total knowledge level regarding obesity and bariatric surgery, while only less than one fifth of them had good total knowledge level regarding obesity and bariatric surgery. These findings were congruent with the study performed by **Hablass et al., (٢٠٢٣),** who studied "Effect of an educational program on minimizing complications for patients post bariatric surgeries, in Egypt", (n=٤٥), and found that; ٤٦.٧٪ of the studied patients had poor total knowledge level regarding obesity and bariatric surgery, ٣١.٢٪ of them had average total knowledge level regarding obesity and bariatric surgery, while ٢٢.٣٪ of them had good total knowledge level regarding obesity and bariatric surgery. This might be due to a combination of factors including limited access to reliable information, misconceptions about the procedure, and a lack of understanding about the long-term implications which can lead to hesitation or reluctance towards considering bariatric surgery as a treatment option for obesity.

Concerning the total lifestyle pattern level of the studied patients regarding bariatric surgery, the present study findings showed that; more than two thirds of the studied patients had unhealthy total lifestyle pattern level regarding bariatric surgery, while less than one third of them had healthy total lifestyle pattern level regarding bariatric surgery. These findings were in the same line with the study performed by **Hamed et al., (٢٠٢٤),** who studied "Effect of implementing nursing care standards on compliance and lifestyle behavior for patients undergoing laparoscopic sleeve gastrectomy, in Egypt", (n=٧٢), and found that; ٩٠.٧٪ of the studied patients had unhealthy total lifestyle pattern level regarding surgery, while ٩.٧٢٪ of them had healthy total lifestyle pattern level regarding surgery. This might be due to the bariatric patients are unaware of the long-term commitments required that may revert to previous behaviors.

Concerning total attitude level of the studied patients regarding bariatric surgery, the present study findings illustrated that; three quarters of the studied patients had negative total attitude level regarding bariatric surgery, while one quarter of them had positive total attitude level regarding bariatric surgery. These findings came inconsistent with the study performed by **AboKhozima et al., (٢٠٢٥),** who studied "The impact of weight loss after bariatric surgeries on the patient's body image, quality of life, and self-esteem, in Egypt", (n= ٤١١), and found that; ٩١.٥٪ of the studied patients had positive total attitude regarding bariatric surgery. This might be due to the need for strict dietary and exercise modifications post bariatric surgery may causing overwhelming leading to negative attitude regarding bariatric procedures.

Concerning correlation matrix between total knowledge, total lifestyle pattern, and total attitude of the studied patients, the present study findings cleared that; there were highly statistically positive correlation between the studied patients' total knowledge, total lifestyle pattern, and total attitude (P<٠.٠٠١). This might

be due to the patients who are well-informed about bariatric surgery are more likely to adopt healthier behaviors post-surgery including proper nutrition, exercise, and medical adherence which in turn can shape a positive outlook toward the procedure.

Conclusion:

More than half of the studied patients had poor total knowledge level regarding obesity and bariatric surgery, less than one third of them had average total knowledge level regarding obesity and bariatric surgery, while only less than one fifth of them had good total knowledge level regarding obesity and bariatric surgery. More than two thirds of the studied patients had unhealthy total lifestyle pattern level regarding bariatric surgery, while less than one third of them had healthy total lifestyle pattern level regarding bariatric surgery. Three quarters of the studied patients had negative total attitude level regarding bariatric surgery, while one quarter of them had positive total attitude level regarding bariatric surgery. There were highly statistically positive correlation between the studied patients' total knowledge, total lifestyle pattern, and total attitude (P<٠.٠٠١).

Recommendations:

-Develop and implement health educational program for patients with bariatric surgery regarding their lifestyle pattern to ensure long-term success.

-Conducting a structured nursing intervention program for increasing the obese patients' awareness regarding the essential lifestyle modifications following bariatric surgery which helps them achieve sustainable health outcomes.

-Follow-up after bariatric surgery is recommended to ensure patient compliance regarding post-surgery instructions.

-Replicating the current study with a larger probability sample is advised to ensure generalizability and wider use of the designed method.

References:

Abd El-Naby, G., & Elmetwaly, A. (٢٠٢٣). Patients' Expectations and Satisfactions Following Bariatric Surgeries: A Mixed Design. The Malaysian Journal of Nursing (MJN), ١٤ (٤), ١٤٢-١٥١. Https://doi.org/١٠.٣١٦٧٤/Mjn.٢٠٢٣.V١٤i٠٤.٠١٥

AboKhozima, A., Zidan, H., Altabbaa, H., Selim, A., Alokl, M., Mourad, M., & Amer, A. (٢٠٢٥). The impact of weight loss after bariatric surgeries on the patient's body image, quality of life, and self-esteem. Langenbeck's Archives of Surgery, ٤١٠(١), ٢٤.

Aboulkhair, F., Afifi, W., Elauoty, M., & Mohamedy, H. (٢٠٢٢). Effect of continuous care model on quality of life and pregnancy maternofetal outcomes after bariatric surgery. Egyptian Journal of Nursing and Health Sciences, ٣(١), ٩٦-١٢٤.

Albogami, Y., Alhashemy, A., Alharbi, S., Aldawsari, K., Alsaygh, K., Alzahrani, S., & Alzahrani, A. (٢٠٢١). Assessment of public awareness and perception toward obesity and bariatric surgery safety for weight loss among Saudi adults in Riyadh city. International Journal of Medicine in Developing Countries, ٥(٢), ٧٠١-٧٠٩. Https://doi: ١٠.٢٤٩١١/IJMDC.٥١-١٦١٠٣٠٦٧٤١.

Almaghrbi, R., Alyamani, R., Aliwi, L., Moawad, J., Hussain, A., Wang, Y., & Shi, Z. (٢٠٢٤). Association between dietary pattern, weight loss, and diabetes among adults with a history of bariatric surgery: Results from the Qatar Biobank Study. Nutrients, ١٦(١٤), ٢١٩٤. Https://doi.org/١٠.٣٣٩٠/Nu١٦١٤٢١٩٤.

Alnajjar, I., Alzaben, A., Alghamdi, A., Alomani, M., Abbas, S., Altammami, F., & Alhubaishi, A. (٢٠٢٣). The remission rate, metabolic changes, and quality of life assessment among patients with type ٢ diabetes post-bariatric surgery in Riyadh, Saudi Arabia: A cross-sectional study. Saudi Medical Journal, ٤٤(٧), ٦٩٤.

Alrashid, F., Idris, A., Alshammari, A., Altamimi, D., & Alsalwah, S. (٢٠٢٢). Current status of bariatric surgery perceptions in Hail region, Saudi Arabia. Medical Science, ٢٦. URL:https://www.discoveryjournals.org/medicalscience.

Altaheri, A., El Gueneidy, M., Shalaby, M., & ElAttar, N. (٢٠٢١). Effect of psycho-educational intervention for obese women post bariatric surgery on body image and self-esteem. Journal of Nursing Science Benha University, ٢(٢), ١٧٠-١٨٩.

Azhri, S., Almuqati, A., Azzeh, F., Alamro, N., Azhar, W., Qadhi, A., & Ghafouri, K. (٢٠٢٣). Factors influencing body weight one year after bariatric surgery. Medicine, ١٠٢(١١), e٣٣١١١.Http://dx.doi.org/١٠.١٠٩٧/MD.٠٠٠٠٠٠٠٠٠٣٣١١١.

Baheeg, M., El-Din, M. T., Labib, F., Elgohary, A., & Hasan, A. (٢٠٢١). Long-term durability of weight loss after bariatric surgery; a retrospective study. International Journal of Surgery Open, ٢٨, ٣٧-٤٠. Https://doi: ١٠.١٠١٦/j.ijso.٢٠٢٠.١٢.٠٠٨.

Dalboh, A., Alalyani, H., Alamri, D., Fahad, M., Alqhtani, S., ALQahtani, A., & Al-Mudhi, M. (٢٠٢٢). Awareness about complications of bariatric surgery among general population in Aseer region. Bahrain Med Bull, ٤٤(٣).

El-Attar, N., & El-Emary, F. (٢٠٢٢). Effectiveness of nursing intervention program on body image, marital satisfaction and quality of life among women post bariatric surgery. Egyptian Journal of Health Care, ١٣(٤), ٧٨٦-٧٩٨.

El-Maghawry, A., Said, S., Amin, F., Yehia, M., & Nofal, A. (٢٠٢١). Effect of an educational program on lifestyle modification for patients undergoing laparoscopic sleeve gastrectomy surgery. Egyptian Journal of Community Medicine, ٣٩(١).

Elsayed, A., Samir, S., Abdel Rahman, A., & Hamed, A. (٢٠٢١). Assessment of compliance for postoperative patients with bariatric surgery. Egyptian Journal of Health Care, ١٢(١), ١٤٤٧-١٤٦٢.

Gulinac, M., Miteva, D., Peshevska-Sekulovska, M., Novakov, I., Antovic, S., Peruhova, M., & Velikova, T. (٢٠٢٣). Long-term effectiveness, outcomes and complications of bariatric surgery. World journal of clinical cases, ١١(١٩), ٤٥٠٤. Available online at: https://doi:١٠.١٢٩٩٨/wjcc.v١١.i١٩.٤٥٠٤.

Hablass, A., Mansour, M., Refaie, A., & Ibrahim, S. (٢٠٢٣). Effect of an educational program on minimizing complications for patients post bariatric surgeries. Journal of Nursing Science Benha University, ٤(٢), ٧٣٢-٧٤٧.

Hamed, S., Hablass, A., & Abdelsamad, O. (٢٠٢٤). Effect of implementing nursing care standards on compliance and lifestyle behavior for patients undergoing laparoscopic sleeve gastrectomy. Egyptian Journal of Health Care, ١٥(٤), ١١٩٥-١٢١٩. Https://doi:١٠.٢١٦٠٨/ejhc.٢٠٢٤.٣٩٩١٦٨.

Hany, M., Abouelnasr, A., Agayby, S., Abdelsattar, A., & Torensma, B. (٢٠٢٣). Towards zero thromboembolic events after bariatric metabolic surgery. Obesity Surgery, ٣٣(٥), ١٦٠٦-١٦١٢.

Hany, M., Mohammad, H., Abd Elhafeez, N. A., Agayby, S., & Torensma, B. (٢٠٢٢). A cross-sectional survey of patients attending follow-up visits after sleeve gastrectomy: Factors affecting weight loss. Obesity Pillars, ٣, ١٠٠٠٢٩. Https://doi.org/١٠.١٠١٦/J.Obpill.٢٠٢٢.١٠٠٠٢٩.

Jabbour, G., & Salman, A. (٢٠٢١). Bariatric surgery in adults with obesity: the impact on performance, metabolism, and health indices. Obesity surgery, ٣١(٤), ١٧٦٧-١٧٨٩.

Khalil, M., Weheida, S., Hany, M., & Abd Allah, N. (٢٠٢٣). Common physiological and psychological problems among post-bariatric surgery patients. Egyptian Journal of Health

Care, ١٤(٣), ١٠٧٥-١٠٩٣. Https://doi: ١٠.٢١٦٠٨/ejhc.٢٠٢٣.٣٣٤٨٥٨.

Lautenbach, A., Wernecke, M., Huber, B., Stoll, F., Wagner, J., Meyhöfer, M., & Aberle, J. (٢٠٢٢). The potential of semaglutide once-weekly in patients without type ٢ diabetes with weight regain or insufficient weight loss after bariatric surgery—a retrospective analysis. Obesity surgery, ٣٢(١٠), ٣٢٨٠-٣٢٨٨.

Mendoza, P., Becchetti, C., Wan, T., Nett, P., Rodrigues, G., Dufour, F., & Berzigotti, A. (٢٠٢١). Malnutrition and alcohol in patients presenting with severe complications of cirrhosis after laparoscopic bariatric surgery. Obesity surgery, ٣١, ٢٨١٧-٢٨٢٢.

Mohammed, D., Sadek, R., Kamal, N., Ramadan, E., & Ghazawy, R. (٢٠٢٢). Quality of life before and after bariatric surgery among obese patients in Minia City, Egypt. NeuroQuantology, ٢٠(١٥), ١٢٥٠-١٢٥٤. Https://doi: ١٠.١٤٧٠٤/NQ.٢٠٢٢.٢٠.١٥.NQ٨٨١١١.

Musendeki, D. (٢٠٢٢). The role of the nurse post-bariatric surgery within a bariatric centre. In Bariatric Surgery in Clinical Practice (pp. ١٥٣-١٥٨). Cham: Springer International Publishing. Https://Doi.Org/١٠.١٠٠٧/٩٧٨-٣-٠٣٠-٨٣٣٩٩-٢_٢٢.

Rabah, M., Albrahim, A., Almajed, H., AlZabin, K., Aldawish, A., Alyahiwi, S., & Alshabnan, A. (٢٠٢٣). Desire for body contouring surgery after bariatric surgery: a nationwide cross-sectional study in Saudi Arabia. Plastic and Reconstructive Surgery–Global Open, ١١(١٢), e٥٤٨٣. Https://doi: ١٠.١٠٩٧/GOX.٠٠٠٠٠٠٠٠٠٠٠٥٤٨٣.

Saleh, A., & Mansour, E. (٢٠٢٢). Effect of mobile application-based interventions on lifestyle and outcomes of patients after obesity surgery. Evidence-Based Nursing Research, ٤(٣), ٩٥-١٠٧. Available online at: https://creativecommons.org/licenses/by-sa/٤.٠/.

Salem, F., Abd El Rahman, A., Kedees Marzouk, H., Sabry, K., & Ali, H. (٢٠٢٤). Effect of structured teaching program on physiological and psychological problems among post-bariatric surgery patients. Egyptian Journal of Health Care, ١٥(٣), ٨٣-١٠٣. Https://doi: ١٠.٢١٦٠٨/ejhc.٢٠٢٤.٣٧٠٣٩٤.

Summerville, S., Kirwan, E., Sutin, R., Fortune, D., & O'Súilleabháin, S. (٢٠٢٣). Personality trait associations with quality-of-life outcomes following bariatric surgery: a systematic review. Health and Quality of Life Outcomes, ٢١(١), ٣٢.

Taha, A., & Ali, M. (٢٠٢٢). Effectiveness of combined exercise and nutritional-behavioral intervention on health outcomes among patients with bariatric surgery. Evidence-Based Nursing Research, ٤(٤), ١-١٥.

Wawrzyniak, A., & Krotki, M. (٢٠٢٢). Environmental factors determining Body Mass Index (BMI) within ٩ months of therapy post bariatric surgery—Sleeve Gastrectomy (SG). Nutrients, ١٤(٢٤), ٥٤٠١.

Wilson, B., Lathigara, D., & Kaushal, D. (٢٠٢٣). Systematic review and meta-analysis of the impact of bariatric surgery on future cancer risk. International journal of molecular sciences, ٢٤(٧), ٦١٩٢. Https://doi.org/١٠.٣٣٩٠/ijms٢٤٠٧٦١٩٢.

Zhu, H., Ren, Z., Hua, H., Zhao, K., Ding, L., Zhu, S., & Xu, Q. (٢٠٢١). Development and validation of a questionnaire to assess the determinants of dietary adherence among patients after bariatric surgery. Patient preference and adherence, ٢٨٦٥-٢٨٧٥.