Egyption Journal
For Specialized Studies
Quarterly Published by Faculty of Specific Education, Ain Shams University

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Editor in Chief
365 Ramses St- Ain Shams University,
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Tel: 02/26844594
Web Site :
https://ejos.journals.ekb.eg
Email :
egyjournal@sedu.asu.edu.eg

ISBN : 1687 - 6164
ISNN : 4353 - 2682

Evaluation (July 2024) : (7) Point
Arcif Analytics (Oct 2024) : (0.4167)
VOL (13) N (47) P (4)
July 2025

الصفحة الرئيسية

م	القطاع	اسم المجلة	اسم الجهه / الجامعة	ISSN-P	ISSN-O	السنه	نقاط المجله
1	Multidisciplinary عام	المجلة المصرية للدراسات المتخصصة	جامعة عين شمس، كلية التربية النوعية	1687-6164	2682-4353	2024	7

معامل التأثير والاستشهادات المرجعية العربي Arab Citation & Impact Factor
قاعدة البيانات العربية الرقمية Arab Online Database
معرفة e-MAREFA
Arcif Analytics

التاريخ: 2024/10/20

الرقم: L24/0228 ARCIF

سعادة أ. د. رئيس تحرير المجلة المصرية للدراسات المتخصصة المحترم

جامعة عين شمس، كلية التربية النوعية، القاهرة، مصر

تحية طيبة وبعد،،،

يسر **معامل التأثير والاستشهادات المرجعية للمجلات العلمية العربية (ارسيف – ARCIF)**، أحد مبادرات قاعدة بيانات **"معرفة"** للإنتاج والمحتوى العلمي، إعلامكم بأنه قد **أطلق التقرير السنوي التاسع للمجلات للعام 2024**.

ويسرنا تهنئتكم وإعلامكم بأن **المجلة المصرية للدراسات المتخصصة** الصادرة عن **جامعة عين شمس، كلية التربية النوعية، القاهرة، مصر، قد نجحت في تحقيق معايير اعتماد معامل "ارسيف Arcif"** المتوافقة مع المعايير العالمية، والتي يبلغ عددها **(32) معياراً**، وللاطلاع على هذه المعايير يمكنكم الدخول إلى الرابط التالي: http://e-marefa.net/arcif/criteria/

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أولاً : بحوث علمية محكمة باللغة العربية :

ثانياً : بحوث علمية محكمة باللغة الإنجليزية :

The Effect of Nutrition Education Program on the Nutrition Status of Bariatric Surgery Patients

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The Effect of Nutrition Education Program on the Nutrition Status of Bariatric Surgery Patients

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Abstract

The effects of a nutrition education program for bariatric surgery patients on the nutritional status of patients with ages from 20 to 50 years, with a BMI of 40 or 35 kg/m2. In a study number of 90 patients , 60 patients received a nutritional education program for at least six months. Dietary habits and nutritional knowledge were assessed using designed questionnaires by a Registered Dietitian (RD). Our results revealed that before surgery, there were significant exchanges of patient's weight ,total dietary intake and nutritional knowledge. After 6 months obvious changes regarding , nutritional knowledge and dietary habits were significantly changed in the study group.

Keywords: Bariatric Surgery, Nutrition Knowledge, Dietary Habits.

ملخص:

العنوان : تأثير برنامج التثقيف الغذائي على الحالة الغذائية لمرضى جراحات السمنة

المؤلفون : مني سامي حلبي خليل ، إيمان محمد مقبل غلاب ، دعاء زكريا زكي ، ساره صلاح يوسف محمد السيد.

الهدف: تأثير برنامج التثقيف الغذائي لمرضى جراحات السمنة على الحالة الغذائيه للمرضى الذين تتراوح أعمارهم من 20 إلى 50 سنة، ومؤشر كتلة الجسم 40 أو 35 كجم/م2. شملت الدراسة 90 مريضاً، 60 مريضاً تلقوا برنامج التثقيف الغذائي لمدة ستة أشهر على الأقل. تم تقييم العادات الغذائية والمعرفة الغذائية باستخدام استبيانات مصممة من قبل أخصائيي التغذية المسجلين (RDs). كشفت نتائجنا قبل الجراحة، أنه كان هناك تغيير كبير لوزن المريض، وإجمالي المتناول الغذائي والمعرفة الغذائية، وبعد 6 أشهر تغيرت التغييرات الواضحة فيما يتعلق بالمعرفة الغذائية بشكل كبير في مجموعة الدراسة.

الكلمات الدالة : جراحات السمنه ، المعرفه الغذائيه ، العادات الغذائيه.

Introduction

Obesity is defined as abnormal or excessive fat accumulation and has been classified as a disease by the World Health Organization **(WHO, 2021).** It has been linked to the development of cardiovascular diseases, endocrine diseases, and cancers**.** Obesity has increased at an alarming rate over the last two decades, to the point where it is now a pandemic, affecting millions of people worldwide, and it is the second leading cause of preventable death in Egypt **(Piché,*et al.*, 2020).**

Nonsurgical obesity management includes lifestyle changes aimed at increasing physical activity, dietary and behavioral changes, and pharmacologic intervention. Medical management can result in a 5%-10% weight loss, but this is not always sufficient in the long run, especially for the severely obese. Despite an increasingly complex understanding of bariatric surgery and its postoperative physiology **(Seeley, *et al.*, 2015).**

The benefits of successful bariatric procedures to the patient and the healthcare system cannot be overstated; however, failure to recognize potential complications related to nutritional deficiencies can be disastrous. It is critical that providers working with this population are aware of the nutrition-related issues as well as the surgery's promising benefits. While bariatric procedures aim to influence the volume of food consumed, none of them necessarily improve the quality of food and drinks consumed, nor do they improve a patient's dysfunctional eating and drinking habits. Each procedure's different mechanisms of action can also have a distinct impact on specific eating behaviors **(Piché,*et al.*, 2020).**

Dietitians play an important role in the bariatric surgery process, as does the need for dietary knowledge retention. There is no research that has been conducted on how dietary knowledge changes over time in bariatric surgery patients. One study discovered that patients' pre-assessment of nutrition knowledge, measured only once, did not predict excess body weight loss

outcomes. 1-2 years after surgery, given that knowledge is a dynamic process, it would be necessary to measure knowledge over a longer period of time and at different time frames**(Alia, *et al.*, 2019).**

Subjects and Methods

a. Subjects

A convenient sample of 90 patients (30 control group and 60 as study ones), from both sexes ranging in age from 20 to 50 years, with a BMI of 40 or 35 kg/m2 and one or more obesity-related co-morbidity. This study was chosen from Prof. Dr. Mohey ELdin ELbanna's Obesity Treatment and Bariatric Surgery clinics in Cairo, Egypt.A number of 30 patients had been chosen from the same clinic who had dropped the nutritional follow-up and received usual care. and 60 patients received nutritional education for at least six months, and were divided into three sessions as follows:

First Session: Before surgery (all patients undergo the first nutritional assessment).which is important in postoperative management.

Second session: immediately following surgery, in the clinic.

Third Session: 6 months after surgery, at the conclusion of the study (all patients undergo a third nutritional assessment after an applied nutritional education program).

b. Methods

Nutritional assessment: by measuring by weight, height, and BMI **(WHO, 2020)**. Checking the serum of hemoglobin, and MCV, fasting blood sugar, serum albumin, and serum creatinine **(O'Kane,*et al.*,2018)**. Clinical assessment of visible signs of malnutrition and postoperative outcomes were examined from each patient's as well as nutritional screening by dietitians **(Cruz-Jentoft, *et al.*,2019)**. Finally, dietary assessment of dietary intakes and eating by using a 24-hr recall recorded for three days

(before and after surgery). Daily food intake data was broken down into energy and other nutrients (carbohydrate, protein, and fat) using food composition tables from the Institute of Nutrition for menu analysis, Dietary history components include the usual eating pattern and Food frequency questionnaires (FFQ) of consumption of specific food items. A shorter time frame (less than one month). Each participant's age, gender, socioeconomic status, and background information were gathered using a questionnaire**(Salvo and Gimeno, 2022)**.

Nutritional Knowledge: The Eating After Bariatric Surgery(EABS) Questionnaire was created by RDs in the program and is based on the Bariatric Surgery Nutritional Assessment (BSNA) Form. It consists of 12 questions. were chosen from the BSNA to reflect the most important pieces of nutrition information that patients needed to know, based on RD consensus. These included post-op diet phases, nutrition complications, vitamin and mineral requirements, protein, portion sizes, and fluid requirements**(Taube-Schiff. *et al.*, 2016)**.

Nutrition Education Program (NEP): Following the third assessment, only the study group will revise the nutritional education program. The nutritional education program will be divided into 6 months of 4-6 sessions **(Maghrabi, *et al.*,2019)**.

Statistical Analysis: Data expressed as mean + standard deviation. Data were statistically analyzed using "ANOVA." For these calculations, the computer software system SPSS "version 20" is used.

Results and Discussion

1- Distribution of Mean Value and Standard Deviation of Anthropometric Measurements of Patients Under Study

Table (1) reveals that the mean of patient weight the control group before NEP was 146.3 Kg, compared to 125 Kg for patients in the same group after NEP. Also it was observed that the body

weight decreased in the male patients of the study group after NEP. Notably, the female patients followed the same trend as the male's groups, the control group weight was 121 Kg before NEP while it decreased to 102 Kg after the NEP, while the females in the study group showed a significant difference observed between the two investigated groups before and after NEP (153 Kg vs. 94.8 Kg, respectively).

In terms of body mass index (BMI) measurements, as depicted in Table (1), followed a similar trend that decreased after the NEP. Our results find that although heavier patients tend to lose more weight after surgery, they still have difficulties reaching a BMI < 30. Those findings were in agreement with **Stocker *et al.(*2022)** report that their patients after 6-months post-surgery was BMI, was 32.7 kg/m2 on average. Also, we were in the same line regarding before NEP group.

Table (1): Distribution of Mean Value of Anthropometrics Measurements of Patients under Study

Groups / Parameters	Males(n)= 20			
	Control Group (n) =7		Study Group (n) = 13	
	Before NEP	After NEP	Before NEP	After NEP
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Height (cm)	175 ± 2.9	175 ± 2.9	173.1 ± 5.3	173.1 ± 5.3
Weight (kg.)	146.3 ± 23.8	125 ± 19.7	128.4 ± 18.8	97.3 ± 13.5
BMI (Kg/m2)	47.7 ± 7.4	40.8 ± 6.3	45.90 ± 13.5	32.4 ± 3.8
Groups / Parameters	Females(n)= 70			
	Control Group (n) = 23		Study Group (n) = 47	
	Before NEP	After NEP	Before NEP	After NEP
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Height (cm)	162.4 ± 7.48	162.4 ± 7.4	161.5 ± 4.81	161.5 ± 4.81
Weight (kg.)	121.2 ± 14.3	102.6 ± 14.2	153.7 ± 19.8	94.8 ± 16.7
BMI (Kg/m2)	46.03 ± 5.49	40.5 ± 9.2	47.9 ± 6.89	36.3 ± 5.88

All data are presented as mean ± standard deviation (SD).

We found a correlation between BMI before and after NEP for our patients under study. The data explained that the mean value of BMI before conducting the nutrition education program was 47.75 ± 7.44 and for the for the female group (46.03 ± 5.49

kg/m²) and that was significantly higher than the mean value of BMI after the program was (40.8143 ± 6.33 kg/m²) and (40.5826 ± 9.26 kg/m²) for male and female respectively. Our finding also matched with **(Stocker, *et al.*, 2022)** who indicated that his patients with a lower preoperative BMI scored higher on average in the post-nutritional educational assessment.

1- Clinical Signs as Nutritional Problems Before and After Nutrition Education Program for Patients.

Our data illustrated that some symptoms appeared after surgery in the control group, about (29%) of the male patients complained of nausea (42.8%) , vomiting, and (42.8%) diarrhea, while some symptoms (bloating, constipation, and hurt burn) improved after surgery in the same group. also, males in the study group had the same trend as the control group.

While concerning females in both groups (control and study) as seen in Fig. (1, 2). Almost all of their patients were suffering from nutritional problems and reported symptoms such as nausea, vomiting, constipation, and diarrhea, after surgery in both groups, while regarding symptoms like burning and bloating, it improved after surgery from 44.6% vs. 61.8 % before surgery, down to 14.8% after surgery and after NEP. We found that nutritional education improved post-bariatric nutritional knowledge, hence improving the patients' outcomes after bariatric surgery, our findings were more consistent with those of **(Cruz-Jentoft ,*et al.*,2019)** who informed that the knowledge of their cases about the prevention of nausea and vomiting was relatively poor before education and improved after NEP. However, the acquired knowledge reduced over time.

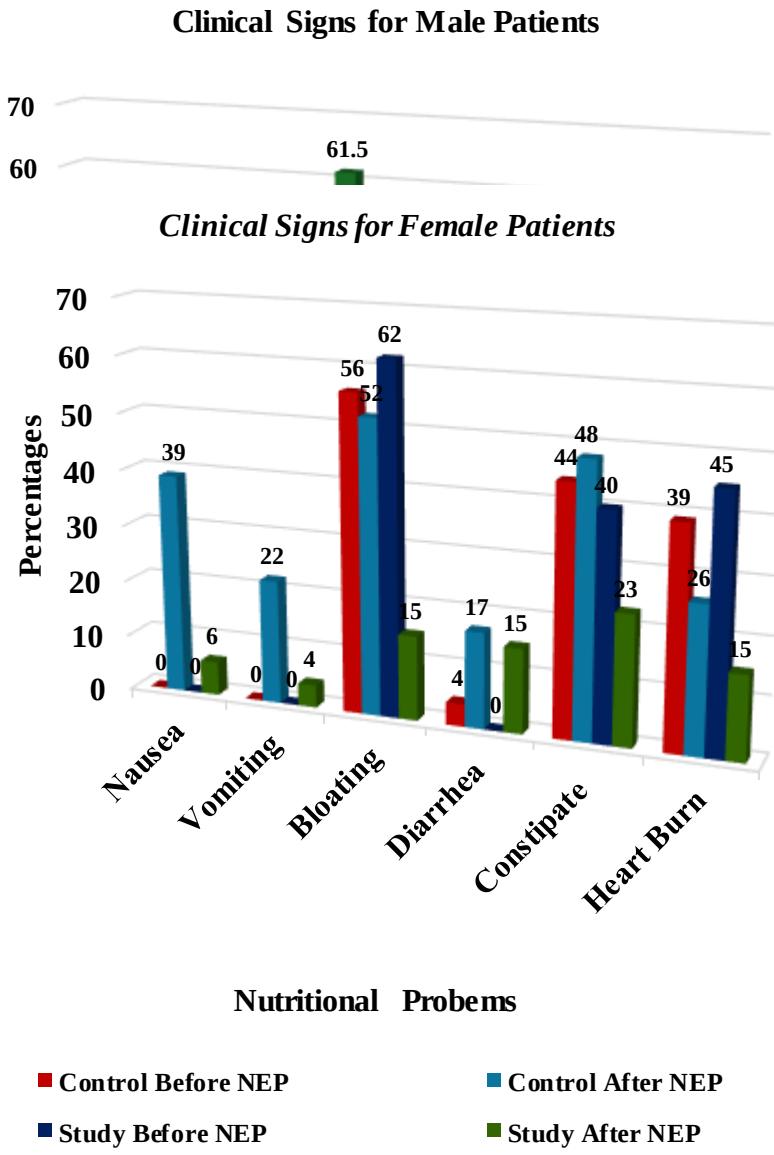

Figure (2): Percentage of Clinical Signs as (Nutritional Problems) Before and After Nutrition Education Program for Female Patients

2- Distribution of RDA and Nutrient Intake of the Patient Under Study.

Findings in Table (2) reveal the relation between macronutrient intake before and after the NEP for male and

female patients from the control group. The results show that the percentages of daily intake before and after NEP exceed the RDA (≥ 100% of RDA), on the other hand, the patients from the study group were in contrast. Before the NEP the group was deficient, their daily intake of energy, protein, and fats was lower than RDA (69%, 49 %, 91%, respectively). While concerning the intake of CHO was higher than their RDA (150 %), comparing to the group after NEP the intake starts to increase closely to RDA as protein and fats, although the level of CHO passed the RDA, specific attention must be given to the patients to control their appetite, hence to control their weight.Protein intake in the study group and improved from 49% before NEP to 98% after NEP. Our findings agreed with (**Maghrabi, *et al.*, 2019**), whose patients undergoing bariatric procedures without nutritional education are at risk for consuming less than adequate amounts of protein, which are needed to help healing after surgery and to preserve lean body mass, According to previous studies, for patients undergoing BS, at least 60 g/day protein is adequate and 80–90 g/day protein is needed to prevent loss of lean body mass preservation at 4 -12 months after bariatric surgery**Ziadlou, *et al.*, (2020).**

Table (2): Distribution of Mean Value of Macronutrients and its Percentages as compared to Recommended Dietary Allowance (RDA) of the Patient Under Study

Groups / Nutrients	RDA Before NEP	Patients(n)= 90 Before NEP				RDA After NEP	Patients(n)= 90 After NEP			
		Control Group (n) =30		Study Group (n) = 60			Control Group (n) =30		Study Group (n) = 60	
		Mean ± SD	%	Mean ± SD	%		Mean ± SD	%	Mean ± SD	%
Energy*(k.cal)*	1700	2013 ± 299	118	1967 ± 239	115	1500	1037 ± 103	69	1588 ± 166	105
Protein*(gm)*	70	88 ± 18	125	82 ± 18	117	80	39 ± 11	49	78 ± 8	98
Fats*(gm)*	50	55 ± 11	110	51 ± 11	102	35	32 ± 5	91	30 ± 6	85
Carbohydrates*(gm)*	250	531 ± 154	212	376 ± 97	150	130	170 ± 22	130	233 ± 24	179

All data are presented as Mean Value and Percentages.

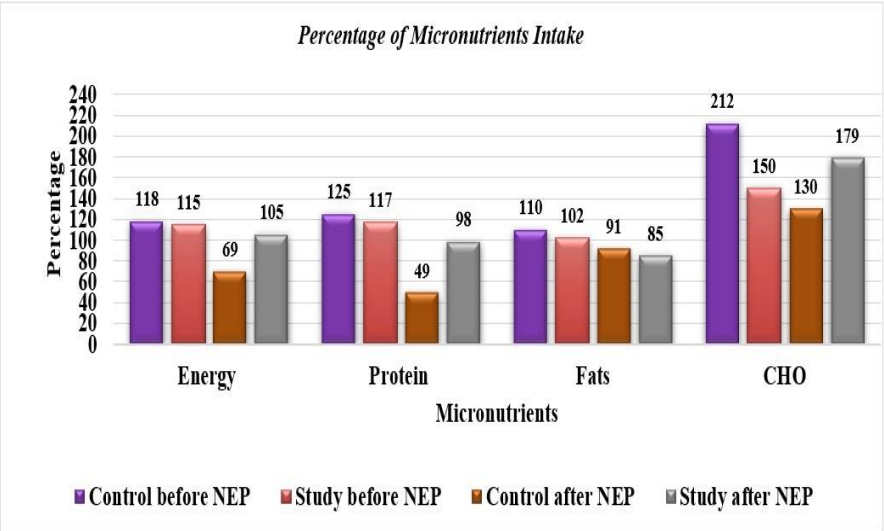

figure (3): The relation between macronutrients intake before and after the NEP for male and female patients from the control group.

2- **Distribution of Percentages of Nutrition Education Assessment for Patients Under Study Before and After Nutrition Education Program**

Table (3) , and Fig. (4) illustrate the distribution of counts and percentages of physical activity among the patients included in this study. Analysis of the patients' activity high levels revealed that 10% of those in the control group before NEP, compared to 50 % were moderately active, while after NEP the percentage increased to 66 % high and 33 % moderate level activity. While according to the study group, 44% did not engage in exercise before NEP, compared to only 10% after NEP. Furthermore, only a small percentage (6 %) of the study group reported high level of physical activity before NEP which increased to 38% after NEP. That proves the positive effect of NEP on patient's lifestyle. In our study, about 76 % of the patients showed a physical activity score equally distributed between the moderate to high which concurs with the work of **(Cena, *et al.*, 2016)**Certainly, the physical activity score, even if improved after NEP, did not

correspond to BMI in either group. Additionally, it is informed by **(Busetto, *et al.*, 2018)** that physical exercise also appears to prevent bone loss after BS.

Data from the same table (3) , and Fig. (5) delineated the frequency and percentage of patient's nutritional knowledge before and after NEP. In the current study the most of control patients 86 % had "Low - moderate" degree score in nutritional knowledge before NEP, while only 14% got high score before NEP, and increased to (57 %) had scored "high" in nutritional knowledge score after NEP. Also, the current information revealed that (88%) of study patients were ranged from low – moderate score in their nutritional knowledge before NEP, down to 35% after NEP. While 12% of the patients were at high degree before NEP, vs. 65 % their knowledge had increased after NEP (**Maghrabi, *et al.*, 2019**). explained that the median knowledge scores of their patients improved significantly following the nutritional education session. These results are in the line with our results.

Table (3): Distribution of Percentages of Nutrition Education Assessment for Patients Under Study Before and After Nutrition Education Program

Groups / Parameters	Response	Patients n = (90)							
		Before NEP				After NEP			
		ControlGroup (n) =30		Study Group (n) = 60		Control Group (n) =30		Study Group (n) = 60	
		No.	(%)	No.	(%)	NO.	(%)	NO.	(%)
Physical Activity	Low	12	40	26	44	0	0	6	10
	Moderate	15	50	30	50	10	33.5	31	52
	High	3	10	4	6	20	66.5	23	38
Nutritional Knowledge	Low	13	43	33	55	1	3	3	5
	Moderate	13	43	20	33	12	40	18	30
	High	4	14	7	12	17	57	39	65

All data are presented as frequency and Percentage.

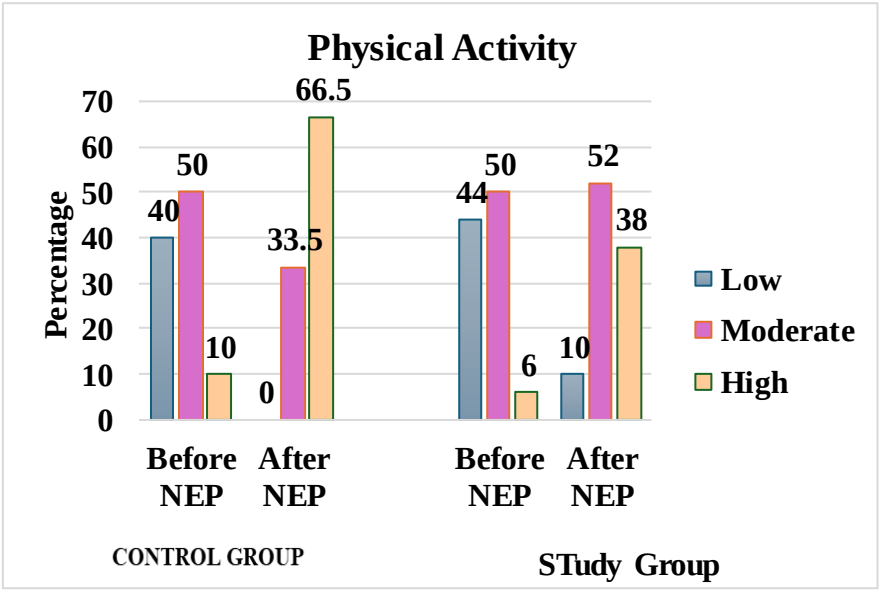

Figure (4): Percentages of Physical Activity for Patients Under Study Before and After NEP

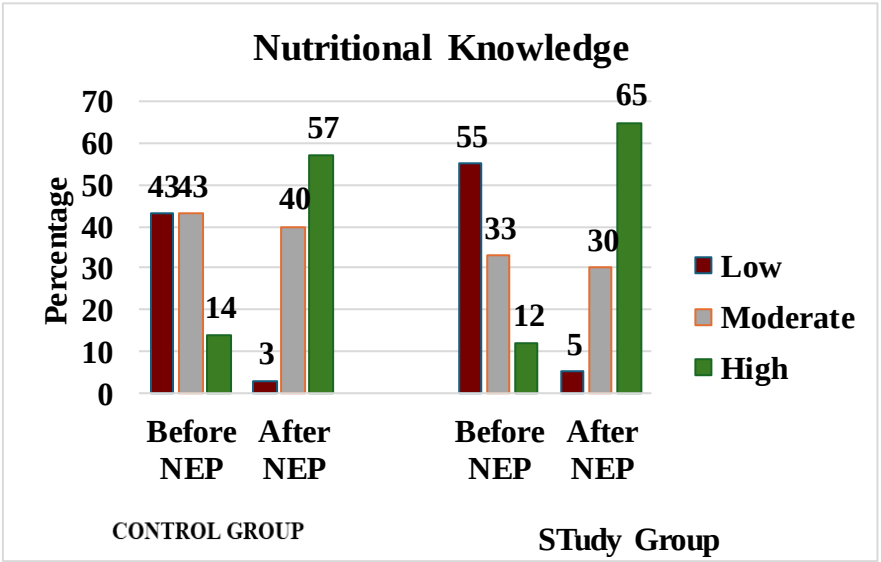

Figure (5): Distribution of Nutrition Knowledge for Patients Under Study Before and After NEP

Finally, it was clear that this is a moderate negative correlation, which means there is an increase in the knowledge score after NEP, before and after NEP at the males and females of

the control group. On the contrary the study group already had an increasing in score of knowledge for male and female grouped after the intervention with NEP but without significance. Our finding aligned with **(Maghrabi, *et al.*, 2019**)who reported that their participants scored higher on nutrition knowledge assessment in the post-nutritional educational program.

Nutritional education improved post-bariatric nutritional knowledge in bariatric patients; however, the acquired knowledge reduced over time. It is important that nutritional education is provided for patients, with ongoing follow-up.

Recommendations

- Assessment and education for patients before and after bariatric surgeries can help detect malnutrition early and make appropriate recommended measures to avoid malnutrition.
- Dietitians should have a crucial role in prescribing and reviewing the diet that gives the RDA of calories, proteins and micronutrients for bariatric patients.
- Periodical monitoring and assessment of the nutritional status should be routinely done as a part of the follow-up every 6 months, and is fundamental for early nutritional intervention, preventing, diagnosing, and treating malnourishment.

Conclusion

Nutritional education programs positively impacted dietary habits, nutritional knowledge and selected nutritional status of postoperative patients, and we recommended the urge need for nutritional education programs and counseling programs by RD.

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المجلة المصرية للدراسات المتخصصة

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الترقيم الدولي الموحد الإلكتروني : 2682 - 4353

تقييم المجلة (يونيو ٢٠٢٤) : (7) نقاط

معامل ارسيف Arcif (أكتوبر ٢٠٢٤) : (0.4167)

المجلد (١٣). العدد (٤٧). الجزء الرابع

يوليو ٢٠٢٥

(*) الأسماء مرتبة ترتيباً ابجدياً.