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Assessment of nurses' knowledge on bariatric surgery and post operative management in general surgery wards

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Abstract

Background: Core management strategies for obesity management include dietary and physical exercises although obese patients benefit from pharmacological and surgical management. In the case of surgical options, nurses play a vital role in immediate post operative care of bariatric patients in the hospital.

Methods: This descriptive quantitative study aimed to assess the knowledge of nurses on bariatric surgery and post operative management in general surgery wards. A questionnaire used to collect the data from 41 surgical ward nurses who worked an inner London NHS hospital.

Results: The least knowledge was about the type of bariatric surgery that achieves reduced absorption due to decreased gastric area and by bypassing the duodenum (29.3%). Post operative care related questions were generally correctly answered such as those about diet, medication and complications. The highest knowledge score linked to years of nursing experience and education level. Self-perception of knowledge regarding bariatric surgery is proportional to the actual knowledge score except for the group.

Conclusion: The study showed overall knowledge level of nurses for bariatric surgery were generally high but some areas require improvement especially around anatomy and physiology. This study shows that a special focus needs to be given to the nursing education and training.

Keywords: Bariatric Surgery, Nurses, Knowledge, obesity

Introduction

Obesity reigns as the ubiquitous epidemic of the 21st century, casting a formidable shadow over public health and societal well-being [1]. When BMI exceeds 25 kg/m^2, it is classified as overweight and body mass index (BMI) over 30 kg/m^2 is classified as obese [2,3]. More than one billion people worldwide are currently obese and if current trend continues 20% of world population will be classified as obese by 2030 [2]. Globally, the financial impact of health services to tackle obesity and related complications is 800 billion pounds per year [4]. Obesity has been linked to several co-morbidities such as diabetes, hypertension, coronary artery diseases, certain forms of cancer, psychological issues and, is a leading cause of preventable death [5,6]. It is a chronic condition that requires management to prevent morbidity and mortality. According to a national survey, around 26% of adults in England are obese and 37.9% are overweight [7]. It is estimated that 6 billion pounds per year are spent in the United Kingdom by National Health Services (NHS) to tackle this health crisis and it is estimated to rise to 9.7 billion pounds per year by 2050 [8].

Even though core management strategies for obesity management include dietary and physical exercises an increasing proportion of obese patients benefit from pharmacological as well as surgical

management. National Institute for Health and Care Excellence (2014)[3], recommends bariatric surgery as effective management for people with BMI >40 kg/m^2 who are unable to achieve weight loss through lifestyle modifications or those with BMI of 35kg/m^2 and above with co-morbidities such as diabetes and hypertension. This is further supported by studies that report bariatric surgery should be based on clinical need rather than BMI alone [9],[10] .Patients referred for bariatric surgery by a general practitioner enter a pathway where specialists including bariatric surgeons, dietitians and psychologists, review them before surgery [11].

The advent of laparoscopic surgeries has further increased the safety and efficacy of all surgeries including bariatric surgeries which resulted in reduced complications, shorter hospital stays and faster recovery [12]. In the last 10 years the average number of bariatric procedures in the UK was 6000-[8]000 per year with 3.6 % more patients being eligible for the same intervention [13]. Prevalence of diabetes mellitus reduced from 40% to 14% ,one year post bariatric surgery along with reportedly improved diabetes related mortality [14,15,16]. Various studies also reported lower incidences of myocardial infarction, stroke and new onset heart failure amongst bariatric patients with cardiovascular diseases who underwent bariatric surgery [17,18,19]. However, readmissions from post bariatric surgery complications are not adequately documented in the UK [13].

Nurses play a vital role in immediate post operative care of bariatric patients in the hospital by supporting the transition from the pre-operative to the post-operative phase. Roles include direct patient care, monitoring and identifying signs of deterioration, managing complications during the post operative period, providing psychological support and health education [20]. Complications such as bleeding, anastomotic leak, stenosis or internal hernia, if not recognised at an early stage can worsen the morbidity and mortality risk by further prolonging hospital stays and delays recovery [21,22]. Several studies identified the need for training for health care professionals to improve their knowledge and competency in the management of patients with obesity whilst primary studies about nurses are limited. [23,24,25]

Methods

Study design and setting

This study used a descriptive quantitative design. Nurse's knowledge level was assessed using a questionnaire. The study setting was an inner London NHS hospital which included three acute general surgical in-patient units which provide a 24 hour 7 day a week service.

Study Sample

The study sample included all nurses working in the three general surgery units totalling 48 staff. A convenient sampling method was chosen for the study. The student nurses, other health care professionals and bank nurses were excluded from the study. In total 41 of these nurses volunteered to answer the questionnaire.

Data collection tool

A structured questionnaire was developed based on the literature review, local trust and National Institute for Health and Care Excellence guidelines.[3] The questionnaire was reviewed by subject experts including a leading bariatric surgeon and lead clinical nurse specialist to ensure the content and face validity. Based on the feedback the questionnaire was finalised and piloted by five nurses. The questionnaire was then delivered via online platform for the main study. The questionnaire consisted of six demographic questions followed by knowledge assessment questions related to bariatric surgery such as types of surgery, risks and post operative management including identifying complications, medications and post operative diet.

Recruitment of participants, data collection and data analysis

The proposal was reviewed with matrons of the units where data collection would be done. Fliers to recruit participants were displayed on the notice board of the wards. After obtaining the approval the questionnaire was directly distributed via work emails with a link to Qualtrics which was convenient for participants to answer at their own time. The data collection was done over a period of two months from 19/12/2022 to 19/02/2023. The response rate for the study was 85.4% as 41 of 48 participants answered the survey questionnaire. Answering questionnaire took around 10 minutes. The data from Qualtrics survey platform was entered into Microsoft Excel and analysed using descriptive statistics such as percentages.

Ethical consideration

The project was approved by local NHS Trust audit committee and was registered as a service evaluation project (number 801/2023). Gatekeeper permission was obtained from the lead nurse and matrons. An email containing a participant information sheet was sent along with the questionnaire which included information regarding the purpose of the study and that the participation was voluntary. The participant information sheet provided sufficient time and opportunity for participants to make an informed decision and indicated that they could withdraw at

any time without giving a reason. The data were stored in a password protected NHS computer and no one besides the researcher had access to the data.

Results

The questionnaire was sent out to 48 staff members in the surgical division and 41 participants responded (response rate of 85.4%). In terms of experience majority (n=19) had up to 5 years experience (47%). 66% (n=27) had a diploma in nursing while only 2 participants had a masters degree (5%). The majority (43%, n=17) had 7 months to 3 years experience in a general surgery department while 85% of the participants (n=35) had experience in caring for bariatric surgery patients. When asked to rate their own perception of knowledge regarding bariatric surgery and post operative care, majority of participants `somewhat agreed` (39%), while, 10 % (n=4) `strongly disagreed (table 1)

Insert table 1 here

Knowledge was assessed using a total of 21 questions consisting of 19 multiple choice questions and 2 true or false questions (table 2). The least knowledge was about the type of bariatric surgery that achieves reduced absorption due to decreased gastric area and by bypassing the duodenum (29.3%) while the most extensive knowledge was about drugs contraindicated in post sleeve gastrectomy or gastric bypass surgery due to the increased risk of bleeding, perforation or ulcer (97.6%). Post operative care related questions were generally correctly answered such as those about diet (82.9%), medications (90.2%) Some of the complications, such as internal hernia, were answered correctly only 53.7%. Participants correctly identified the point of contact for post operative care (85.4%) .

Insert Table 2 here

Insert Figure 1 here

The total knowledge score for individual participants is illustrated in figure 1. Each correct answer was given a score of one with maximum score of 21 for knowledge questions. Scoring was in blue with the average score in orange. As per the figure 1 the average score is 14 (66.7 %) was scored by 12% of respondents (5 respondents). 61% of the respondents (25 respondents) scored above average and 27% of respondents (11 respondents) scored below average.

Insert Table 3 here

Table 3 shows the knowledge scores according to characteristics of the participants. It shows that

those with 11-15 years of experience (n=5) scored the highest (16.8) and nurses with experience up to 5 years (n=19) had the lowest score (13.7). Participants with masters degrees scored the highest with 16.5 (n=2) which was marginally higher than those with bachelor's degrees who scored 16 (n=27). Nurses who had more than 6 years experience (n=10) scored the highest 15.7 while nurses with up to 6 months experience (n=4), scored the least at 11.5. Nurses who had experience in caring for bariatric surgery patients scored 15 (n=35) and those who did not have experience in caring for these patients scored 13 (n=6). Self-perception of knowledge by participants and the actual knowledge score shows that those who responded, 'strongly agreed'(n=13) as well as 'neither agree nor disagree' (n=6) to having a good understanding of bariatric surgery and post operative care scored the highest score of 15.6.

Discussion

A substantial proportion of the staff (around 50%) within the general surgery department possess less than 5 years of overall nursing experience, with only 20% of the staff having more than 16 years of nursing experience and specifically more than 6 years experience within the field of general surgery. These figures suggest a high turnover rate within the department. High turnover of staff is a known issue within acute hospital settings.[26] This would be associated with poor nursing knowledge and limited educational opportunities. [27] Concerning the education level, 66% of the nurses had diploma in nursing and only 5% had a master's degree in nursing. This could be attributed to the fact that previously nurses were mostly diploma qualified and since 2013 the NMC has mandated that nurses must have a degree qualification for registration.[28] Educational qualification has directly been related to the level of knowledge in previous studies. [26,29]

The nurses scored least in questions related to anatomy, physiology, obesity risk and BMI related knowledge with the correct responses varying from 29% to 48.8% (table 2 questions 1,2,3,9). The least correct response was for question 9- RYGB is the correct surgical method which bypasses the duodenum and causes reduced absorption due to less gastric area. This suggests the lack of knowledge regarding anatomical variation based on different bariatric surgical techniques and criteria for surgical management of obesity. It could possibly be due to the lack of integration of bariatric training both in the current nursing curriculum and in post registration training. Another factor affecting knowledge could be the lack of funding and availability of specialised post registration courses such as bariatric surgery. [30] These findings align with previous studies which

identified that nurses lack knowledge about bariatric surgical techniques. [31, 32] Conversely, questions related to post operative care and complications including contraindicated medications scored the highest between 82.9% to 97.6% (Table 2, Questions 6,7,11,12,13,14). Demographic data showed that 54% of participants care for bariatric patients on average one to four times a week. This data indicates that nurses have increased knowledge regarding post operative complications and care possibly due to increased familiarity around practical care of patients rather than theoretical understanding. [5] Question number one which assessed the knowledge regarding increasing risk factors associated with obesity (diabetes, hypertension and cancer) had only a 43.9% correct response (18 out of 41). Although awareness of diabetes and hypertension as common complications of obesity is widespread healthcare professionals lack knowledge regarding the increased risk of cancer in relation to obesity.[33] This is consistent with a study by Fan *et al*. (2020)[23] which also showed that only half of the nurses knew about carcinoma as an obesity related risk factor. The average knowledge score of individual participants (figure 1) was 14, with 73% of the respondents scoring above average.

Total individual scores varied from maximum of score 20 to minimum of score 6 showing huge variation in the level of knowledge. This variation could be attributed to the inclusion of newly qualified nurses and nurses without bariatric surgery experience and holds significant implications for future recommendations. For example, participant four, scored the lowest score (6) which could be attributed to the participant having less than 6 months of experience in a general surgery department. However, when asked to rate their understanding of the bariatric surgery and post operative care, participant 4 rated themselves to 'somewhat agree' to having good knowledge which does not correspond to their actual knowledge score. A study by Alotaibi *et al* (2017)[34] also demonstrated this finding where nurses' knowledge score was not in alignment with their self-perception. This lack of insight could raise potential patient safety concerns as the staff might not seek help or refer to other colleagues or clinicians for help in timely manner. However, the perception was not true for all nurses as majority of the nurses had an accurate perception of their knowledge and skills in the current study.

On review of knowledge score and total years of nursing experience, the knowledge score is not shown to improve with increased years of nursing experience (table 3). In the present study those with more than 16 years' experience scored less than (score 15.3) the 11-15 years' experience group (table 3). This aligns with Tiryag and Atiyah (2021)[31] who demonstrated that increased work experience has no significant relationship with knowledge. Studies have proven that educational level have impact on nurses knowledge level or expertise at work. [20,23,35,36]. In the current study the

group with master's degrees in nursing scored the highest (n=2) compared to those who did diploma (n=10) or bachelor's in nursing (n=27) (Table 3). A study by Fan *et al*. (2020)[23] stablished that those with master's had a better understanding of complications of bariatric surgery although they lacked knowledge in others. However, this was not the case for the current study as the participants with a master's scored well through all aspect of bariatric surgery and post operative care. This finding is limited due to sample size. The present study findings demonstrate that 30 participants scored 14 and above in the knowledge assessment which signifies a good knowledge level. This aligns with US study by Ponstein (2012)[25],which examined nurses knowledge of bariatric surgery using an online questionnaire and demonstrated that nurses had up to 70% knowledge of surgical methods. Knowledge level in the current study was related to both educational level and general surgery experience. This level may be higher because it was conducted in an inner London teaching hospital. Teaching hospitals provide enhanced opportunities for nurses to improve their knowledge and skills through clinical exposure, research collaboration with other professionals and continuous access to training and teaching sessions held within the ward. Nurses in teaching hospitals also benefit from access to resources such as workshops for continuing professional development, seminars and research. [30] These findings are in contrast to previous similar studies where nurses were identified as having poor knowledge. [23, 24. 31,32]. However, these studies were all limited either due to the geographical location, number of participants or the nursing education in their respective countries. In a study by Bogiatzis et al (2020)[37], the identified learning needs of bariatric nurses such as post operative complications and management, bariatric surgical techniques and the role of nurses in bariatric patient pathway were similar to the current study. Evidence based education and training opportunities are seminal aspects of competency and professional development as well as for ensuring safe patient care [38].

Conclusion

The study showed overall knowledge level of nurses for bariatric surgery were generally high but some areas require improvement especially around anatomy and physiology. A carefully planned evidence based educational programme can bridge the gap in knowledge and promote optimal patient outcome. Collaboration between bariatric surgeons, bariatric clinical nurse specialists, educators and nurse practitioners is required to ensure best practice in protocols. Conducting further research to assess nurse's knowledge of bariatric surgery and post operative care with a larger sample size will enable more generalisable results.

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Table 1: Demographic variables

	n		%
Survey Response	Responded	41	85.4
	Not responded	7	14.6
Years of nursing experience	Up to 5 years	19	47
	6-10 years	8	19
	11-15 years	5	12
	>16 years	9	22
Educational level	Diploma in nursing	27	66
	Bachelor's in nursing	10	24
	Master's in nursing	2	5
	Missing data	2	5
Experience in general surgery department	Up to 6 months	4	9
	7 months-3 years	17	43
	4-6 years	10	24
	>6 years	10	24
Experience in bariatric surgery and post op care	Yes	35	85
	No	6	15

Self-perception of knowledge	Strongly disagree	4	10
	Somewhat disagree	2	5
	Neither agree nor disagree	6	15
	Somewhat agree	16	39
	Strongly agree	13	31

Attributes		N	Knowledge Score
Years of nursing experience	Up to 5 years	19	13.73
	6-10 years	8	15.87
	11-15 years	5	16.8
	>16 years	9	15.3
Educational level	Diploma in nursing	10	14.4
	Bachelor's in nursing	27	16.0
	Master's in nursing	2	16.5
	Missing data	2	12
Experience in general surgery department	Up to 6 months	4	11.5
	7 months-3 years	17	14.77
	4-6 years	10	15.66
	>6 years	10	15.70

Experience in bariatric surgery	Yes	35	15
	No	6	13
Self-perception of knowledge	Strongly disagree	4	13.5
	Somewhat disagree	2	14
	Neither agree nor disagree	6	15.6
	Somewhat agree	16	14.5
	Strongly agree	13	16.6

Table 3: Knowledge Score according to participants attributes

Figure 1: Total knowledge score of individual participants

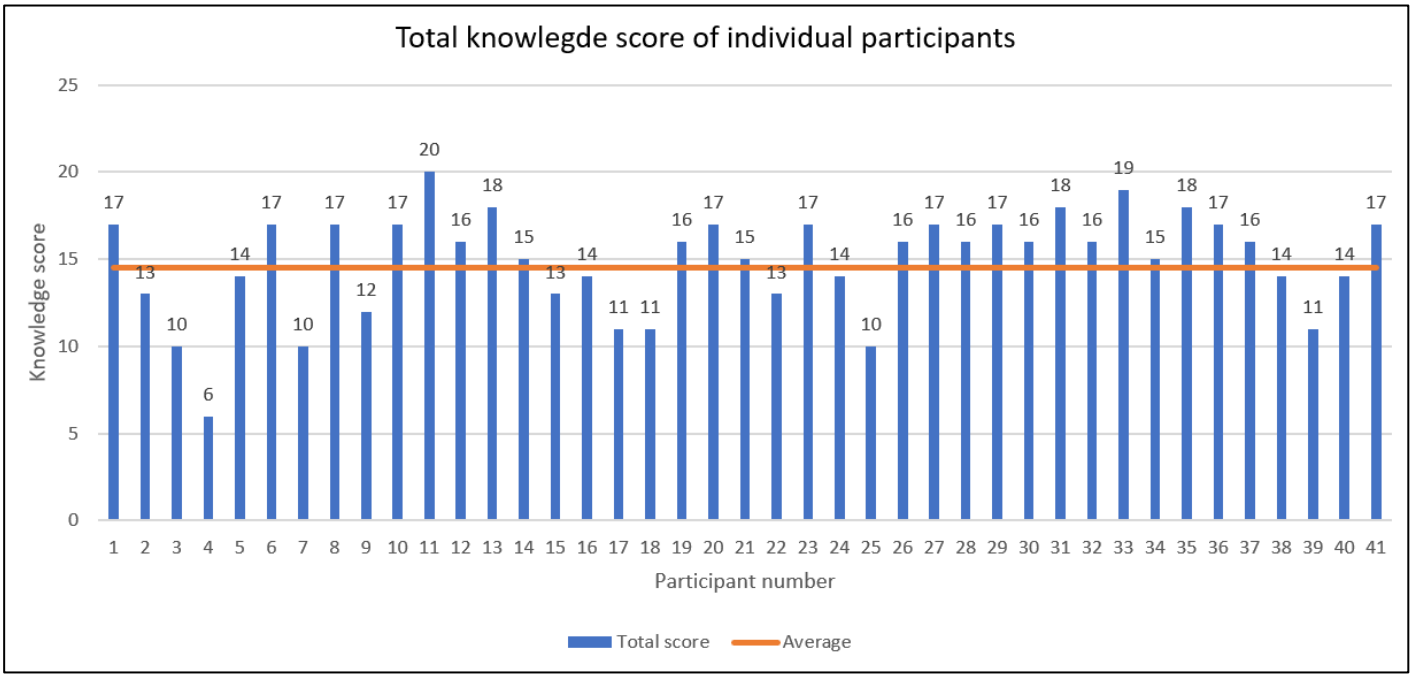

Table 2. Response to knowledge based questions

Question no	Question	Total responses	Number of correct responses	Percentage of correct responses
1	Obesity increases the risk of co-morbidities, such as (choose the correct answer)	41	18	43.9%
2	Which of the following range of BMI group of patients benefit from Bariatric surgery when unable to achieve weight loss through lifestyle changes?	41	20	48.8%
3	Bariatric surgery is recommended to which of the following BMI range with at least one obesity associated co-morbidities such as T2 DM or hypertension?	41	16	39%
4	People of certain ethnic background such as South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean are prone increased cardiovascular risk at lower BMI?	41	30	73.42%
5	Which among the following are the most common types of bariatric surgeries?	41	33	80.5%
6	Which are the three risks associated with laparoscopic gastric band?	41	39	95.1%
7	Which group of drugs are contraindicated after sleeve gastrectomy or gastric bypass surgery due to increased risk of gastric ulcer, perforation and bleeding?	41	40	97.6%
8	Diuretics are contraindicated post sleeve gastrectomy or gastric bypass due to increased risk of which of the following complications?	41	29	70.7%
9	In which method of bariatric surgery weight loss is achieved by reduced absorption of ingested food due to less gastric area for absorption and by bypassing the duodenum	41	12	29.3%
10	Which of the following bariatric surgical method has highest risk of internal hernia?	41	22	53.7%
11	What type of diet advised for 10 days following bariatric surgery?	41	34	82.9%
12	Post bariatric surgery patients are advised to take lifelong proton pump inhibitor (anti-acid) and which other medication?	41	37	90.2%
13	During the post op period in the hospital, TED stocking or pneumatic compression device must be always worn except when patient is …….	41	35	85.4%
14	If a patient develops chest pain and breathlessness during the post operative period that could be indicative of ……requiring urgent escalation,	41	34	82.9%
15	What is one of the serious complications of Roux-en-Y gastric bypass that can result in peritonitis and septic shock?	41	30	73.2%
16	Bariatric surgery helps to improve Type 2 diabetes with	41	31	75.6%
17	All patients with type 2 diabetes who had bariatric surgery will be cured of diabetes	41	34	82.9%
18	In post op day 1, how often must the patient be asked to perform incentive spirometry per hour?	41	23	56.1%

19	For patients with drain in situ on post-op day 1 before starting oral fluid, the nurse must…	41	30	73.2%
20	The following drugs as appropriate for immediate post op bariatric patients who are hypertensive (BP more than 150/90 mmHg)	41	28	68.3%
21	Who is the primary point of contact for post operative bariatric patients following discharge, for any non-emergency concerns?	41	35	85.4%