Prevalent bariatric dietary practices: Is India on the same page?

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Abstract

Background: In the past decade, there has been an increase in the number and types of bariatric procedures in India. It is, thus, important to monitor prevalent bariatric practices.

Aim: To identify prevalent pre- and post-operative dietary practices by bariatric professionals across India.

Materials and Methods: Data regarding various pre- and post-surgery dietary practices were collected using an Internet-based survey. Thirty-three bariatric professionals including dietitians (n = 25) and surgeons (n = 8) across the country participated in the survey. The data were analysed, and prevalent dietary practices were identified.

Results: Five (20%) dietitians were not involved in the pre-surgery consultation. Nineteen (70%) professionals put all patients on a low-calorie pre-surgery diet regardless of their body mass index, with a preference (n = 21; 77.7%) for liquid diet. Twenty-three (70%) professionals put patients on post-surgery liquid diet for 1–2 weeks. Thereafter, 28 (84.8%) professionals recommended soft diet for 2–4 weeks. Twenty-seven (81%) professionals used protein shakes (as opposed to dietary sources) as their primary source of protein for the first 3 months post-surgery. Fourteen (36%) professionals stopped protein shake supplements within 6 months post-surgery. Ten (30%) professionals reported whey protein aversions in >25% of the patients. Twenty-three (71%) professionals advocated a meal with <30% of carbohydrates for up to 1 year. Twenty-eight (84%) professionals used portion control method for meals.

Conclusion: Our study reflects that prevalent dietary practices among Indian bariatricians are in line with national and international guidelines.

Keywords: Dietary practices, guidelines, India, survey

INTRODUCTION

There has been a rapid increase in non-communicable diseases due to the economic development in India in the recent past.[3] Although there is an increased awareness about fitness, well-being and health, more than 30 million Indians are obese in the country.[2] According to the National Family Health Survey-4, the overall percentage of obese or overweight women and men has increased from 12.6% to 20.6% and 9.3% to 18.9%, respectively, from 2006 to 2016.[3] Although there is a linear increase in obesity rates in both urban and rural populations, the prevalence of overweight and obese men and women is higher in the urban setting.[4] Nearly 31.3% and 26.6% of urban women...
and men have obesity compared to 15.0% and 14.5% of rural women and men, respectively, as shown in Table 1.

Simultaneously, there has been a rise in the number of bariatric surgeries with variable techniques in India. According to the Obesity Surgery Society of India, the number of individuals undergoing bariatric surgery has increased from 2200 in 2010 to over 5000 in 2011.[8] It is interesting to note that India has the second highest volume for information searches on “Bariatric Surgery.”[9] Even though sleeve gastrectomy is the most common bariatric procedure in the country,[6] various other techniques such as Roux-en-Y gastric bypass, one-anastomosis gastric bypass (OAGB) and duodenal switch surgeries are also practised.

Apart from other common issues in the immediate post-surgery phase, the patient may face dumping syndrome, eating behavioural problems and malabsorption of nutrients. Malabsorption is one of the main factors that contribute to weight loss in procedures such as OAGB, which may contribute to protein malnutrition and micronutrient deficiencies,[9] if not managed well. Further, bariatric patients have pre-existing comorbidities (such as diabetes, hypertension and hyperuricaemia), requiring close dietary monitoring in the post-surgery period. Continued nutritional support is essential to manage pre- and post-surgical nutritional requirements.[6]

The need for monitoring the present bariatric practices in the country is thus twofold to emphasise the complexity of the bariatric patients’ needs and to appreciate the understanding of nutrition amongst bariatric practitioners. Thus, the primary aim of the study is to identify prevalent pre- and post-operative dietary practices by bariatric professionals across India.

MATERIALS AND METHODS

A survey was developed to obtain information about general nutritional practices advocated by bariatricians (dietitians and surgeons) in the country. It was refined by an expert panel (including surgeons, dietitians, physicians and statisticians) that reviewed for readability and comprehension. A web-based survey approach was selected as it aids in rapid and efficient survey development and data collection, lower cost, anonymity and reduced errors compared to manual data entry.[7] It also enabled us to reach bariatricians across the country. Google Forms was employed as the survey platform.

Participants

A brief 3-min survey was electronically distributed to practicing bariatric surgeons and dietitians in India.

Intervention

The survey was divided into two main sections. The sections included pre-surgery dietary protocol and early post-surgery dietary protocol. Pre-surgery dietary questions surveyed the participation of a dietitian during consultation and characteristics of the pre-surgery diet.

Post-surgery survey assessed the nature of the different phases (liquid diet, soft diet and regular diet) as well as eating practices (portion control and introduction of certain food) and supplementation with a focus on protein supplementation.

The participants were encouraged to answer the questions without any support of study material or consultation with their peers.

The responses were maintained and analysed on Microsoft Office Excel. Categorical data were expressed as percentage (%).

RESULTS

Thirty-three responses were received from bariatric professionals practicing across India, out of which 25 (76%) were dietitians and 8 (24%) were surgeons [Table 2]. Twenty-seven (87.9%) of the total respondents worked in a bariatric clinic. The most common bariatric procedure in the set-up was reported to be sleeve gastrectomy, as reported by 22 (66.7%) professionals. More than half of the professionals (n = 19; 59.4%) reported following the bariatric nutrition guidelines for the Indian population.[8]

Pre-surgery dietary practices

Five (20%) dietitians were not involved in the pre-surgery consultation. Table 3 summarises responses regarding

| Table 1: Percentage of overweight/obese individuals according to the National Family Health Survey-4 |
|-----------------------------------------------|
| Overweight or obese (BMI ≥25 kg/m²) | NFHS-4 (2015-2016) | NFHS (2005-2006) Total (%) |
| Urban (%) | Rural (%) | Total (%) | Urban (%) |
|---|---|---|---|
| Women | 31.3 | 15.0 | 20.6 | 12.6 |
| Men | 26.6 | 14.3 | 18.9 | 9.9 |

NFHS: National Family Health Survey-4, BMI: Body mass index
Table 2: Details of respondents of the survey

| Bariatric professionals | n (%) |
|-------------------------|-------|
| Dietitians              | 25 (76) |
| Surgeons                | 8 (24) |

Table 3: Pre-surgery dietary practices

| Query (n=27) | Options | n (%) |
|--------------|---------|-------|
| Nature of patients put on a pre-surgery diet | BMI >50 | 2 (7.4) |
| | BMI >40 | 5 (18.5) |
| | All | 19 (70.3) |
| | None | 1 (3.7) |
| Type of diet (kcal) | <1000 | 19 (70.4) |
| | 1000-1500 | 8 (29.6) |
| Duration of the pre-surgery diet | 1 week | 18 (66.7) |
| | 2 weeks | 8 (29.6) |
| | 1-3 months | 1 (3.1) |

BMI: Body mass index

pre-surgery dietary practices. While 19 (70.3%) respondents reported advising pre-operative liquid diet to all patients, 5 (18.5%) recommended to only patients with body mass index (BMI) >40, while 2 (7.4%) recommended to only patients with BMI >50.

Post-surgery dietary practices

In the post-surgery phase, 23 (70%) bariatricians advocated a liquid diet for 1–2 weeks [Table 4]. Twenty-seven (81.8%) professionals advised protein shake (supplementation) as the primary source of protein within the first 6 months, with 30 (90.9%) supporting whey protein as the choice of protein in the supplement. Ten (30%) professionals reported whey protein aversion in >25% of patients [Table 5]. Most (n = 28; 84.8%) of the professionals recommended a soft diet for a period of 2–4 weeks. Nineteen (59.3%) professionals depended on dietary sources to provide fibre in the diet [Table 6].

Capsaicin-containing foods

Eight (25%), 7 (21.9%) and 12 (37.5%) respondents allowed patients to resume eating high capsaicin-containing foods before 3, after 3–6 months and 6 months post-surgery, respectively. Five (15%) respondents disallowed resuming high capsaicin-containing foods lifelong.

Portion control

Twenty-eight (84%) respondents used portion control/fixed meal size method for meals opposed to advising patients to ‘eat until full’. Of those who advocate portion control, 17 (60.7%) professionals used the cup size method to explain the concept of portion control.

DISCUSSION

Our study found that five (20%) dietitians were not involved during pre-surgery consultation. However, according to nutrition guidelines by Sherf Dagan et al., patients should consult bariatric dietitian prior to surgery. The guidelines state that eating behaviours and eating patterns (e.g., binge eating and grazing), weight loss history and physical activity habits should be identified. Patients should be given pre-operative and post-operative dietary guidelines. Weight loss expectations should also be discussed. The outcomes of a project conducted by the British Dietetic Association showed that patients benefited from pre-surgery dietary consultation as they knew what to expect after the surgery.

Majority of our respondents (n = 19, 70%) chose to put patients on a low-calorie diet of < 1000 calories for a period of 1 week prior to surgery (n = 18, 66%). This is within the American Society of Metabolic and Bariatric Surgery (ASMBS) guidelines of 800–1000 kcal for a maximum of 3 months pre-surgery and the Indian guidelines of <1000 calories for 7–10 days. However, there

Table 4: Immediate post-surgery dietary practices

| Query (n=33) | Options | n (%) |
|--------------|---------|-------|
| Permitted amount of liquids/hour (after first 48 h post-operative) (ml) | 60-90 | 17 (51.5) |
| | 90-120 | 7 (21.2) |
| | 120-150 | 4 (12.1) |
| | As much as tolerated | 5 (15.2) |
| Commencement of clear liquids | After 4-6 h | 12 (36.4) |
| | After 12 h | 6 (18.2) |
| | After 24 h | 13 (39.3) |
| | After 2 days | 2 (6.06) |
| Duration of liquid diet (weeks) | 1 | 6 (18.2) |
| | 2 | 17 (51.5) |
| | 3-4 | 8 (24.2) |
| | >4 | 2 (6.1) |

Table 5: Post-surgery protein supplementation practices

| Query (n=33) | Options | n (%) |
|--------------|---------|-------|
| Primary source of protein within the first 6 months | Dietary source | 6 (18.2) |
| | Protein shake | 27 (81.8) |
| Duration of protein shake supplementation | <3 months | 8 (24.2) |
| | 3-6 months | 6 (18.2) |
| | 6-12 months | 6 (18.2) |
| | 1-2 years | 9 (27.3) |
| | Lifelong | 4 (12.1) |
| Carbohydrates in protein shake | No carbohydrates | 6 (18.2) |
| | Low carbohydrate content | 27 (81.8) |
| Source of sweetness in protein shake | Artificial sweeteners | 5 (15.1) |
| | Fructose | 4 (12.1) |
| | Sucrose | 1 (3.0) |
| | Unsweetened | 23 (69.7) |
| Preferred source of protein in the shake | Whey | 30 (90.9) |
| | Pea | 1 (3.0) |
| | Egg and albumin | 1 (3.0) |
| | Depends on tolerance | 1 (3.0) |
| Percentage of patients who experience whey protein aversion | <25 | 23 (69.7) |
| | 25-50 | 7 (21.2) |
| | 50-75 | 2 (6.1) |
| | >75 | 1 (3.0) |
are other recommendations of duration from 2 to 6 weeks.\[9\] Pre-operative low-energy diets are expected to reduce liver size, making surgical access and liver retraction easier.\[12\]

According to recommendations, the post-surgery liquid diet is for 1–2 weeks, the soft/pureed diet for 2 weeks and solid food to begin only 1 month post-surgery.\[8,9\] Our study too confirmed that majority advocate a liquid diet for 1–2 weeks (n = 23; 70%), but most (n = 28; 84.8%) recommended a soft diet for a longer period of 2–4 weeks, delaying progression to solid food by 2 weeks. In our opinion, timely initiation of solid food ensures satiety and better nutritional composition in the diet. However, it could be individualised based on the patient’s health status post-surgery (presence of complications, etc.)

Patients with obesity are at the risk of protein deficiency and loss of lean muscle mass after surgery.\[13\] There should be a greater focus on protein-rich foods as the protein requirements need to be met despite reduced portion sizes. Post-surgery protein requirements by Indian recommendations are 1–1.5 g/kg/day and 1.5–2.0 g/kg/day in malabsorptive procedures,\[8\] which are at par with the ASMBS guidelines of 1.5 g/kg/day or more.\[11\] Whey protein should be the first choice of supplementation as it contains leucine which helps to safeguard skeletal muscle.\[9\] Majority of our respondents (n = 30, 90%) too recommended whey protein as the source in protein shakes. With 30.6% vegetarian bariatric patients,\[14\] it is of no surprise that 27 (81.8%) respondents chose protein shakes as the primary protein source as opposed to dietary protein in the early (first 6 months) post-operative period.

Apart from preserving lean body mass, the role of dietary protein in weight loss is well elucidated in literature. Protein-rich diets provide high satiety and therefore reduce overall consumption of calories. They also improve food-induced thermogenesis. A small randomised controlled, double-blind, pilot study found that post-surgery bariatric patients on protein supplementation lost significantly a higher amount of weight and fat mass as compared to the control group.\[13\]

Food aversions post-surgery have been well studied in the past, especially aversion to protein-rich food due to post-operative smell and olfactory changes.\[15\] In our study, ten (30%) professionals reported whey protein aversions in >25% of the patients. In our practice, this could be overcome by providing flavourless and odourless protein supplements from other sources such as pea or soy protein. This supplement could be mixed in milk, Indian buttermilk, flour, soups and broths in order to meet patients’ protein requirement.

Portion control eating after bariatric surgery is a relatively new interest area for better outcomes. In our recent publication,\[16\] bariatric patients who were subjected to portion-controlled eating post-surgery had successful bariatric outcomes, wherein 96.8% of the patients lost more than 50% of excess weight. Nearly 84% (n = 28) of the respondents in our survey advocated portion-controlled eating for the patients. It is our hypothesis that portion-controlled eating enables patients to appreciate new threshold of satiety, reducing vomiting episodes and overeating.\[14\]

There are certain limitations in this study. It has a small sample size (n = 33) due to the limited number of specialised bariatric dietitians in the country. In addition, like any other survey, self-reported data leave space for misinterpretation of the questions, however well they are structured.

**CONCLUSION**

Our study reflects that prevalent dietary practices amongst Indian bariatricians are in line with national and international guidelines. Pre-surgery evaluation by dietitian and initiation of solid meals at 4 weeks, as prescribed in the guidelines, should be encouraged amongst bariatricians. Further, workshops and continued medical education could improve the role of nutritional care in post-bariatric patients.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.
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