Role of pre-operative Very Low-Calorie Diet (VLCD) in obese general surgery patients

Ryan Ward, Krinal Mori

RESEARCH WEEK
5-9 OCTOBER 2020
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Background

Very Low-Calorie Diet (VLCD) is recognised as an effective short-term weight loss intervention for adults with obesity[1], and is increasingly prescribed pre-operatively to patients undergoing bariatric surgery to facilitate weight loss, reduce operation difficulty and decrease peri-operative complications[2].

VLCD, however, is not routinely prescribed in non-bariatric general surgery for obese patients, and instead general weight loss advice is given. Uncertainty exists as to whether implementing a pre-operative VLCD program in these patients may be beneficial for clinical outcomes[3].

Aims and objectives

This study aimed to determine if a 2-week pre-operative VLCD program in obese patients undergoing major general surgery improved weight and BMI loss. Secondary outcomes concerned length of stay, rate of post-operative complications and diet tolerability.

Methods

This was a non-randomised controlled study, with patients choosing which arm of the study they were assigned to.

All participants had height and weight recorded at both their pre-operative consultation and on the morning of their surgery.

Patients in the intervention arm consumed a pre-approved VLCD, consisting of liquid shakes, for 2-weeks prior to their surgery. VLCD patients also completed an additional post-operative questionnaire regarding compliance with and attitude towards the VLCD. Length of stay and post-operative complications were monitored via Electronic Medical Record.

Descriptive analysis was conducted for baseline patient characteristics. Independent t-tests, Mann-Whitney U Tests and Chi-squared tests were performed to determine statistical significance between groups for clinical and surgical outcomes. Categorical variables were expressed as a number and percentage frequency.

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Results

16 patients were recruited for the study (M: 7, F:9, mean age 44 years). No statistically significant difference ($P < 0.05$) was found between the study groups for any of the outcome measures (Table 1). Categorical variable findings are summarised in Fig 1 and Table 2.

	Control Group (n=9)	VLCD Group (n=7)	*P*-Value
Mean (+/- SD) weight change (kg)	+0.19 (1.7)	-2.8 (5.3)	0.13
Mean (+/- SD) BMI change (kg/m²)	+0.064 (0.59)	-0.88 (1.9)	0.17
Mean Length of Stay (Days)	2.7	2.7	0.97
Mean Number of Post-Operative Complications	0.33	0.29	0.84

Table 1. Patient outcomes

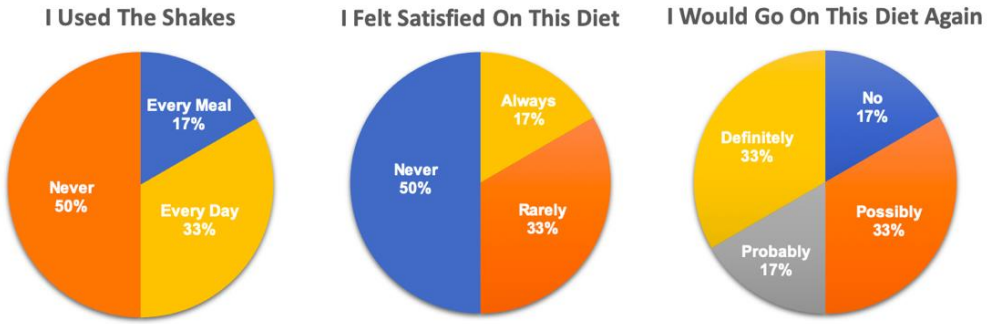

Fig 1. Post-operative VLCD questionnaire responses

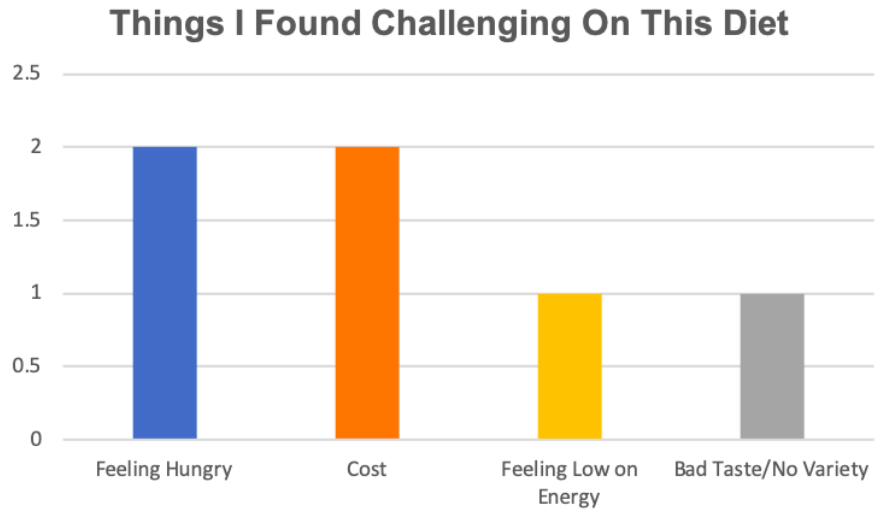

Table 2. Post-operative VLCD questionnaire responses

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Discussion

The COVID-19 pandemic prevented recruitment of an adequate sample size for this study, decreasing the validity of statistical analysis. In conjunction with low VLCD compliance (as illustrated in Fig 1), it is difficult to infer clinical significance from these preliminary findings or to compare results with similar studies that exist in the literature. While not statistically significant, however, the mean weight/BMI loss of 2.8 kg in the VLCD group may be clinically relevant.

Responses to the VLCD questionnaires show an acceptable level of tolerability of the VLCD diet, but identify barriers to implementing a study of this design.

Conclusions

While not statistically significant, this study has identified that a pre-operative VLCD program may increase weight/BMI loss in obese patients undergoing major elective surgery. How such a program may affect parameters such as hospital length of stay and post-operative complication rate requires further investigation. This study is planned to continue to both increase the sample size and address limitations identified by categorical outcome measures.

References

1.Pekkarinen T, Mustajoki P. Use of very low-calorie diet in preoperative weight loss: efficacy and safety. Obes Res. 1997;5(6):595-602.

2.Gerber P, Anderin C, Thorell A. Weight loss prior to bariatric surgery: an updated review of the literature. Scand J Surg. 2015;104(1):33-9.

3.Ross LJ, Wallin S, Osland EJ, Memon MA. Commercial Very Low Energy Meal Replacements for Preoperative Weight Loss in Obese Patients: a Systematic Review. Obes Surg. 2016;26(6):1343-51.

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