

Revolutionizing Obesity Management

Role of Bioelectrical Impedance Analysis and Multidisciplinary Interventions

Suhairul, S¹, Raudzah, R², Rosdliizwan, R², Nubairi Adha, Y², Zanariah, MY², Siti Nor Asma, D².

¹ Beseri Health Clinic, Ministry of Health, Malaysia

² Kangar Health Clinic, Ministry of Health, Malaysia

Introduction

- Obesity is a complicated condition influenced by many factors and has become a global epidemic, posing serious challenges to public health.
- Bioelectrical impedance analysis (BIA) assessment of individuals with obesity can be a useful tool to guide an appropriate rehabilitation plan focused on reducing fat mass while preserving or increasing fat-free mass (1).
- A multidisciplinary team (MDT) approach will lead to more effective and lasting weight loss, as well as improved health outcomes (2).

Aim

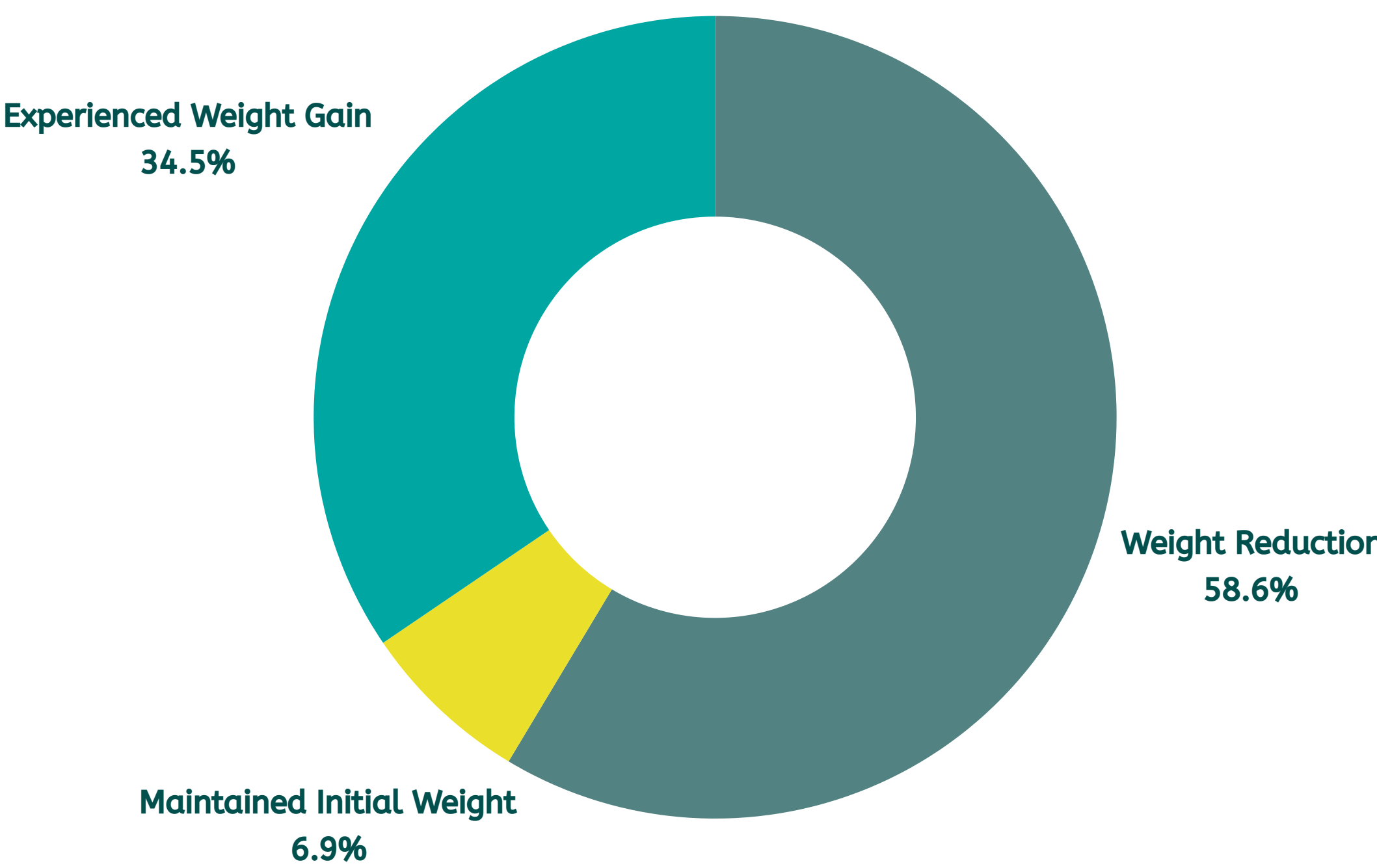
- To evaluate the role of BIA in managing preclinical obesity and the effectiveness of a MDT intervention in obesity management in Perlis, Malaysia, through a structured healthcare delivery model.

Methodology

	From May 2023 to November 2023 at 2 health clinics in Perlis, Malaysia
	Total of 29 patients who agree to join weight management clinic (WMC) received a comprehensive treatment plan.
	Chronic Care Model (CCM) of healthcare delivery applied over 6 months. It also consists of Trim and Fit module for interventions from Nutrition Department, Ministry of Health Malaysia.
	1.Diet: Individualized low-calorie diet. 2.Exercise: Structured physical activity programs. 3.Psychotherapy: Psychological support and counselling. 4.Medication: Use of anti-obesity medications (AOMs).
	Data on weight and BIA measurements were collected monthly and analyzed using Microsoft Excel.

Result

- 1 Outcomes:**
- 58.6% achieved weight reduction with a mean loss of 4.1%.
 - 6.9% maintained their initial weight.
 - 34.5% experienced weight gain.



BIA result of weight static and weight gain

50%
increased muscle
mass

50%
decreased fat mass

- 2 Bioelectrical Impedance Analysis (BIA):**
- For those with static weight or weight gain:**
- 50% showed increased muscle mass.
 - 50% demonstrated decreased fat mass.
- For those with achieved weight reduction:**
- 100% showed increase muscle mass.
 - 100% demonstrated decreased fat mass.
- AOMs Usage:**
- 17.2% of patients utilized AOMs, with a mean treatment duration of 3 months.**



BIA proved valuable in redefining preclinical obesity, showing and addition 20.7% improvement in addition to BMI.

Overall, 79.3% of participants exhibited positive changes in BIA compare to weight alone.

Discussion

- The MDT diagnosis and treatment model can enhance patients' self-efficacy and weight loss treatment for a long time and reduce the occurrence of weight regain (3).
- A structured MDT approach combined with the CCM results in improved outcomes and greater sustainability in obesity management, both in the short and long term (4).
- The selection of weight loss medication should consider several factors, including contraindications, safety profile, associated comorbidities, efficacy, cost, and availability (5). In our context, all patients were on anti-obesity medications (AOM) showed a significant impact on weight reduction.
- Relying solely on BMI can lead to both underestimation and overestimation of body fat, offering limited insight into an individual's true health status.
- For individual assessment, the presence of excess adiposity should be verified through direct body fat measurement, or at least one additional anthropometric indicator such as waist circumference, waist-to-hip ratio, or waist-to-height ratio by using validated techniques and thresholds tailored to age, sex, and ethnicity (6).

Conclusion

- The MDT approach plays a crucial role in effectively managing obesity, leading to improved weight loss and related health outcomes.
- The incorporation of supportive tools such as BIA and AOMs has further enhanced and reshaped obesity management within primary care settings

Reference

- Brunani A, Perna S, Soranna D, Rondanelli M, Zambon A, Bertoli S, Vinci C, Capodaglio P, Lukaski H, Cancellio R. Body composition assessment using bioelectrical impedance analysis (BIA) in a wide cohort of patients affected with mild to severe obesity. Clin Nutr. 2021 Jun;40(6):3973-3981. doi: 10.1016/j.clnu.2021.04.033. Epub 2021 Apr 28. PMID: 34139470.
- Apovian CM. The clinical and economic consequences of obesity. Am J Manag Care. 2016;22(7 Suppl):S176-S185.
- Yu B, Chen Y, Qin H, Chen Q, Wang J, Chen P. Using multi-disciplinary teams to treat obese patients helps improve clinical efficacy: the general practitioner's perspective. Am J Transl Res. 2021 Apr 15;13(4):2571-2580. PMID: 34017416; PMCID: PMC8129361.
- Foster D, Sanchez-Collins S, Cheskin LJ. Multidisciplinary Team-Based Obesity Treatment in Patients With Diabetes: Current Practices and the State of the Science. Diabetes Spectr. 2017 Nov;30(4):244-249. doi: 10.2337/ds17-0045. Erratum in: Diabetes Spectr. 2018 Feb;31(1):119. doi: 10.2337/ds18-er01. PMID: 29151714; PMCID: PMC5687103.
- Rodrigues Silva Sombra L, Anastasopoulou C. Pharmacologic Therapy for Obesity. [Updated 2024 Feb 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK562269/>.
- Rubino, F., Cummings, D.E., Eckel, R.H., Cohen, R.V., Wilding, J.P., Brown, W.A., Stanford, F.C., Batterham, R.L., Farooqi, I.S., Farpour-Lambert, N.J. and le Roux, C.W., 2025. Definition and diagnostic criteria of clinical obesity. The Lancet Diabetes & Endocrinology.