



ELENCO POSTER MARTEDI' 20 OTTOBRE ORE 18.10/19.10

Beyond Weight Loss: Body Composition Changes During Tirzepatide Treatment in a Pilot Real-World Clinical Nutrition Cohort

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Background

Tirzepatide induces substantial weight loss in patients with obesity. However, real-world evidence regarding body composition changes and muscle-related outcomes during treatment remains limited. Beyond total weight loss, preservation of muscle-related parameters is increasingly recognized as a key component of successful obesity treatment.

Aim

To evaluate longitudinal changes in body composition and muscle-related parameters in patients with obesity treated with tirzepatide within a standardized institutional Clinical Nutrition outpatient program.

Methods

This pilot real-world observational case series included 12 adults with obesity treated with tirzepatide. Anthropometric parameters and body composition assessed by bioelectrical impedance analysis were collected at baseline and follow-up. Variables included body

weight, BMI, appendicular skeletal muscle mass (ASMM), phase angle, protein prescription and physical activity habits.

Results

The cohort included 12 patients (50% female), with a median age of 63.5 years. Median body weight decreased from 114.9 kg to 101.7 kg after 6 months, corresponding to a median weight loss of 13.5 kg (-10.7%), predominantly driven by fat mass reduction. Among patients with available body composition assessment (n=9), median ASMM decreased from 27.1 kg to 24.9 kg, while phase angle remained stable (5.4° vs 5.3°). Exploratory analysis suggested a trend toward lower ASMM reduction among patients receiving higher protein prescriptions. Among patients with available 12-month follow-up, clinically meaningful weight loss was maintained, while phase angle remained stable despite changes in skeletal muscle mass.

Conclusions

Tirzepatide treatment was associated with clinically meaningful weight loss, predominantly driven by fat mass reduction. Despite heterogeneous changes in skeletal muscle mass, phase angle remained stable over time. Beyond weight loss, individualized nutritional management, including adequate protein prescription, may contribute to shaping body composition trajectories during tirzepatide therapy. Larger studies are warranted.

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Very-Low-Energy Ketogenic Therapy: a new tool for circadian realignment in subjects with obesity and chronodisruption

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Background and Objectives

Chronodisruption is increasingly recognized as an emerging component of obesity pathophysiology and cardiometabolic risk. Evening chronotype represents a clinically detectable manifestation of circadian misalignment, yet nutritional strategies specifically targeting circadian disruption remain poorly defined. Because metabolic and nutritional signals may modulate peripheral circadian clocks, we investigated whether very-low-energy ketogenic therapy (VLEKT), compared with the Mediterranean diet (MedDiet), was associated with circadian realignment in adults with obesity and intermediate or evening chronotype. We further examined whether this effect was independent of weight loss and body-composition changes and explored its molecular correlate through peripheral core clock-gene expression.

Methods

In this multicenter, non-randomized study, 70 adults with obesity and intermediate or evening chronotype were initially enrolled; 49 completed the 6-month intervention and were included in the final analysis (VLEKT, n=28; MedDiet, n=21). Chronotype and sleep quality were assessed at baseline (T0), 3 months (T3), and 6 months (T6) using the Morningness–Eveningness Questionnaire (MEQ) and Pittsburgh Sleep Quality Index (PSQI), respectively, together with anthropometry and bioelectrical impedance analysis. Longitudinal trajectories were analyzed using linear mixed-effects models including intervention group, time, and

group × time interaction as fixed effects and participant-specific random intercepts to account for repeated measurements. Post-hoc comparisons were adjusted for multiple testing. Multivariable models further assessed whether changes in chronotype were independently associated with intervention after adjustment for baseline MEQ, percentage weight change, and body-composition changes. As an exploratory molecular endpoint, peripheral blood expression of the core clock genes PER1, PER2, PER3, CLOCK, and ARNTL/BMAL1 was evaluated before and after VLEKT in a subgroup of participants.

Results

MEQ trajectories differed significantly between interventions (group × time $p < 0.001$). In the VLEKT group, MEQ increased from 37.6 ± 8.9 at T0 to 51.4 ± 8.8 at T3 and 49.4 ± 11.0 at T6, compared with 40.9 ± 7.0 , 43.5 ± 8.8 , and 45.0 ± 8.6 , respectively, in the MedDiet group. Post-hoc analyses confirmed a greater increase in MEQ with VLEKT at both T3 and T6 (both adjusted $p < 0.001$). Consistently, evening chronotype decreased in the VLEKT group from 60.7% at T0 to 7.1% at T3 and 21.4% at T6, while morning chronotype increased from 0% to 21.4% and 46.4%, respectively. These shifts remained significant after correction for multiple comparisons (T0 vs T3, adjusted $p < 0.001$; T0 vs T6, adjusted $p < 0.001$; T3 vs T6, adjusted $p = 0.027$), whereas chronotype distribution did not significantly change in the MedDiet group (all adjusted $p > 0.05$).

In multivariable analyses adjusted for baseline MEQ and percentage weight change, intervention group remained independently associated with Δ MEQ at both T3 ($B = -13.76$, $\beta = -0.90$, $p < 0.001$; $R^2 = 0.570$, adjusted $R^2 = 0.541$) and T6 ($B = -7.60$, $\beta = -0.47$, $p = 0.016$; $R^2 = 0.246$, adjusted $R^2 = 0.196$), whereas percentage weight change was not independently associated with Δ MEQ at either T3 ($B = 0.29$, $\beta = 0.24$, $p = 0.179$) or T6 ($B = 0.02$, $\beta = 0.02$, $p = 0.919$). The association between intervention and Δ MEQ remained significant after separate additional adjustment for changes in fat mass, fat-free mass, phase angle, and total body water, both at T3 (all $p < 0.001$) and T6 ($p = 0.014$, $p = 0.014$, $p = 0.001$, and $p = 0.022$, respectively), whereas none of these body-composition changes independently predicted Δ MEQ (all $p > 0.05$).

PSQI decreased from 8.2 ± 4.3 at T0 to 5.2 ± 2.9 at T3 and 5.8 ± 2.7 at T6 with VLEKT, compared with 8.2 ± 3.7 , 7.1 ± 3.7 , and 7.6 ± 3.6 , respectively, with MedDiet; however, the differential longitudinal trajectory did not reach statistical significance (group × time $p = 0.073$). Consistently, intervention group was not independently associated with Δ PSQI at T3 ($B = 0.97$, $\beta = 0.15$, $p = 0.466$) or T6 ($B = 2.04$, $\beta = 0.28$, $p = 0.069$), whereas baseline PSQI was independently associated with Δ PSQI at both time points (both $p < 0.001$).

Finally, in the exploratory molecular subgroup ($n = 6$), peripheral blood mRNA expression significantly increased from T0 to T6 for PER1 ($p = 0.048$), PER2 ($p = 0.047$), and ARNTL/BMAL1 ($p = 0.033$), whereas PER3 ($p = 0.354$) and CLOCK ($p = 0.176$) did not significantly change.

Conclusions

VLEKT was associated with a robust and sustained shift toward a more morning-oriented chronotype in adults with obesity and intermediate or evening chronotype, with a longitudinal trajectory significantly different from that observed with MedDiet. Importantly, this association was independent of weight loss and was not accounted for by concurrent changes in body composition. The parallel modulation of selected peripheral core clock genes provides preliminary molecular support for a potential interaction between ketogenic nutritional therapy and circadian regulation. These findings suggest that circadian realignment may represent an additional dimension of the clinical response to VLEKT beyond weight reduction, warranting confirmation in randomized studies specifically designed to investigate circadian endpoints

Nutritional Status, Adiposity and Clinical Outcomes in Hospitalized Patients with COVID-19: Results from the MODleCOSe in Italy Study

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Background/Objectives: Obesity is a recognized risk factor for severe COVID-19; however, once severe acute illness requiring hospitalization has developed, the relationship between adiposity, nutritional status, and clinical outcome may be more complex. We investigated the association of nutritional status and anthropometric measures at hospital admission with clinical outcomes in patients hospitalized with COVID-19 during the first two pandemic waves in Italy.

Methods: This retrospective multicenter study included 1,187 patients hospitalized with COVID-19 across nine Italian centers participating in the MODleCOSe in Italy registry. Nutritional status was assessed using the Controlling Nutritional Status (CONUT) score and the Prognostic Nutritional Index (PNI), together with available anthropometric measures. The primary outcome was a composite of in-hospital death or transfer to an intensive care unit (ICU). Multivariable logistic regression was used to assess the independent association between nutritional status and outcome.

Results: Overall, 275 patients (23.2%) experienced the composite adverse outcome. Patients with an adverse outcome had lower body weight (75.0 ± 17.6 vs. 78.6 ± 15.6 kg; $p=0.0066$) and BMI (26.9 ± 6.4 vs. 27.5 ± 4.8 kg/m²; $p=0.0403$). Among patients with available abdominal

anthropometry, waist circumference (91.7 ± 17.9 vs. 98.6 ± 13.9 cm; $p=0.002$) and waist-to-height ratio (0.5 ± 0.1 vs. 0.6 ± 0.1 ; $p=0.001$) were also lower, and abdominal obesity was less prevalent (33.3% vs. 52.0%; $p=0.0335$) in patients with adverse outcomes. Consistently, CONUT score was higher in patients with adverse outcomes (4.4 ± 2.3 vs. 3.4 ± 1.8 ; $p<0.001$), whereas PNI did not differ significantly. In multivariable analysis, higher CONUT remained independently associated with adverse outcome (OR 1.79, 95% CI 1.28–2.49 per 1-SD increase; $p=0.0006$) (Figure 1). This association persisted after additional adjustment for admission $\text{PaO}_2/\text{FiO}_2$ (OR 1.65, 95% CI 1.12–2.45; $p=0.012$).

Conclusions: In patients already hospitalized with COVID-19, adverse outcomes were associated not only with poorer nutritional status, as reflected by higher CONUT, but also with lower measures of overall and abdominal adiposity. Although the anthropometric findings require caution because of limited data availability, their concordant direction suggests that the relationship between adiposity and prognosis may differ according to the clinical stage of disease. These findings highlight the complex interplay between obesity, nutritional reserves, and outcome during severe acute illness.

Keywords: COVID-19; obesity; adiposity; nutritional status; malnutrition; CONUT; anthropometry; prognosis.

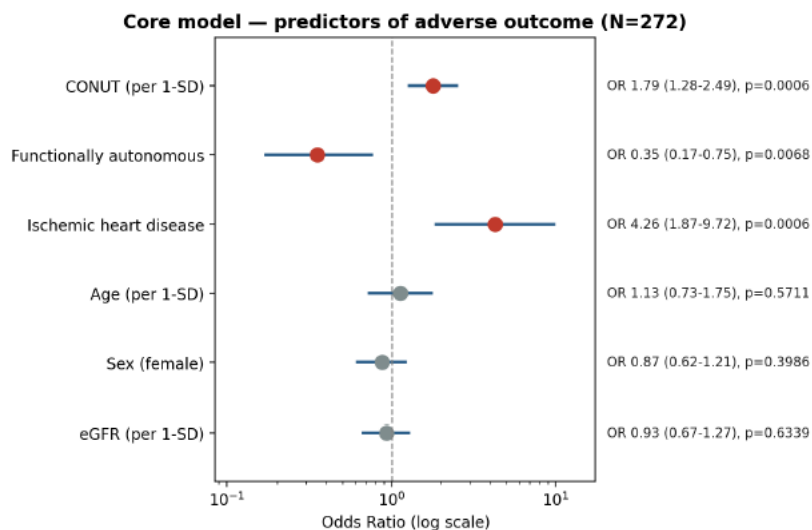


Figure 1. Core multivariable model for adverse outcome (N=272).

Longitudinal CT-Derived Body Composition Changes and Clinical Outcomes in Patients with Advanced Thyroid Carcinoma Treated with Tyrosine Kinase Inhibitors

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Introduction: Body composition changes may influence treatment tolerance and clinical outcomes in patients with advanced radioiodine-refractory thyroid carcinoma receiving tyrosine kinase inhibitors (TKIs). We investigated changes overtime in computed tomography (CT)-derived body composition parameters and their association with treatment-related toxicity, dose reduction, and treatment discontinuation.

Methods: Patients with advanced thyroid carcinoma treated with TKIs were considered. Longitudinal analysis was performed in patients with CT scans available before treatment initiation (T0) and during follow-up (T1). Malnutrition was assessed using GLIM criteria. Body composition was analyzed on CT images at the third lumbar vertebra to quantify total adipose tissue (TAT), visceral adipose tissue (VAT), subcutaneous adipose tissue (SAT), skeletal muscle area (SMA), and skeletal muscle index (SMI).

Results: We enrolled 30 patients with a median BMI of 24.7 kg/m^2 ; 43% of patients were malnourished according to GLIM. Significant changes were observed between T0 and T1 for TAT ($p=0.02$), SAT ($p=0.02$), SMA ($p=0.03$), and SMI (46.6 ± 14.2 vs $43.8 \pm 11.6 \text{ cm}^2/\text{m}^2$, $p=0.04$). No significant association emerged between body composition changes and grade 3-4 toxicity. Patients requiring TKI dose reduction showed significant reductions in TAT ($p=0.04$), VAT ($p=0.04$), SMA ($p=0.02$), and SMI ($p=0.02$). Among patients who did not discontinue therapy, significant reductions in adipose tissue compartments (TAT $p=0.01$, VAT $p=0.03$, SAT $p=0.03$) were observed, while in parallel skeletal muscle indices remained unchanged.

Conclusions: Clinically relevant changes overtime in body composition parameters were observed during TKI therapy, with differential patterns between muscle and adipose tissue compartments. These findings indicate the importance of assessing CT-derived body composition to identify patients at higher risk for adverse outcomes.

From Caregiver Satisfaction to Caregiver Experience: Integrating CROMs and CREMs in an Integrated Home Enteral Nutrition Pathway

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Background: Informal caregivers represent an important source of information for evaluating the quality of complex home-care pathways. While caregiver-reported outcome measures (CROMs) can capture the perceived results of care, caregiver-reported experience measures (CREMs) provide complementary information on how care is delivered and experienced. According to the adapted Donabedian framework proposed by De Rosis, patient- and caregiver-reported measures can contribute to performance assessment by linking perceived outcomes with the processes underlying the care pathway. This study describes the evolution from a previous caregiver satisfaction assessment to a subsequent evaluation of caregiver-reported experience within an integrated Home Enteral Nutrition (HEN) service.

Methods: Two evaluations of the same geriatric HEN pathway at IRCCS INRCA, Ancona, Italy, were considered. The previous assessment explored caregiver satisfaction through 19 items addressing core and peripheral components of the service. The current evaluation, conducted in January 2026, involved 30 informal caregivers interviewed using a semi-structured questionnaire specifically designed to explore experience across the HEN pathway, including training, home visits, delivery of nutritional products and devices, accessibility, communication, coordination and management of critical situations. Quantitative data were analysed descriptively and qualitative responses thematically.

Results: The previous CROM-based assessment showed a high overall level of caregiver satisfaction, with a mean score of 5.61/6. Core components obtained a mean score of 5.66, while peripheral components scored 5.58. However, the satisfaction measure provided limited information on the organizational processes underlying this positive perception. The subsequent CREM-based evaluation provided a more detailed description of the caregiver experience. Training, scheduled home visits, home delivery of nutritional products and devices, accessibility to healthcare professionals and communication with the hospital team emerged as interconnected components of a continuous care pathway. At the same time, the CREM identified specific vulnerabilities that were less visible through the overall satisfaction assessment, particularly regarding low-frequency but high-impact situations and the need for reinforcement of information and support during unexpected events.

Conclusions: The transition from CROM-based satisfaction assessment to CREM-based experience assessment represents a shift from measuring what caregivers perceive as the outcome of care to exploring how the organization and delivery of care contribute to that perception. In line with De Rosis' adaptation of the Donabedian framework, CROMs and CREMs should therefore be considered complementary rather than interchangeable.

measures. In complex home-care pathways, combining the two perspectives may provide a more comprehensive understanding of service performance: satisfaction captures the perceived result, whereas experience measures help open the “black box” of the care process and identify actionable organizational determinants of quality and continuity.

Keywords: caregiver-reported outcomes; caregiver-reported experience; caregiver satisfaction; home enteral nutrition; integrated care; Donabedian framework; home healthcare.

Evaluation of Resting Energy Expenditure (REE) through Indirect Calorimetry (IC) and correlation with Body Composition (BD) and Muscle Strength (MS) in Eating Disorders (ED): a Retrospective Observational Study.

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Background

In Eating Disorders (ED) (Anorexia Nervosa, Bulimia Nervosa, Avoidant/Restrictive Food Intake Disorder, and Binge Eating Disorder), marked alterations in metabolic homeostasis and adaptation processes (hypometabolism from prolonged fasting or hypermetabolism from refeeding) significantly compromise the

accuracy of traditional predictive formulas in estimating Resting Energy Expenditure (REE), making indirect calorimetry essential as the gold standard.

At the same time, energy-protein malnutrition and lean body mass (FFM) lead to alterations in cellular function and muscle strength, the integrated assessment of which is essential for defining nutritional status.

Aim of the Study

This retrospective observational study aims to analyze differences in resting energy expenditure (REE) measured among the different clinical phenotypes classified according to the DSM-5, assessing their concordance with the main estimating equations. The study also aims to examine the interrelationships between energy expenditure, respiratory quotient, bioimpedance parameters, skinfold thickness and functional performance, measured by handgrip strength.

Methods

The following statistical tools will be applied in the statistical analysis: analysis of variance, correlations, and multiple linear regression models to clarify the influence of functional and anthropometric markers on the specific metabolic variability of each diagnostic subgroup. The ultimate goal is to provide robust clinical evidence, essential for personalizing nutritional therapy and preventing both metabolic complications and refeeding syndrome.

Preliminary Results

Descriptive Statistical Analysis of the Sample (N = 39)

The results of the descriptive statistical analysis conducted on the final cohort of 39 patients reveal a sample characterized by high anthropometric and clinical heterogeneity. The main age of the subjects was 36.0 ± 16.9 years (range: 17.3–74.4 years), and the mean Body Mass Index (BMI) described a population that was generally classified as primary obese (30.1 ± 10.6 kg/m²). However, the dispersion of anthropometric data was markedly wide, ranging from severe underweight (minimum BMI of 12.4 kg/m²) to critically obese (maximum BMI of 50.1 kg/m²). From a bioenergetic perspective, the measured Resting Energy Expenditure (REE) shows a mean value of 1489.6 ± 396.4 kcal/day, fluctuating from a minimum of 828.0 kcal/day to a maximum of 2317.0 kcal/day in close correspondence with the variations in the subjects' body mass. The mean Respiratory Quotient (RQ) of the cohort is set at 0.87 ± 0.04 (values between 0.78 and 0.96); from a metabolic physiology point of view, this data indicates a sharing of energy substrates at rest unbalanced in favor of

carbohydrate oxidation (CHO%: $56.3\% \pm 14.3\%$), compared to a lower share deriving from lipid oxidation (Fat%: $43.7\% \pm 14.3\%$) (Table 1).

Congruence Analysis and Formula Verification

Mathematical consistency analysis and methodological stability confirmed the high internal accuracy of the calorimetric data collected for the entire sample (N = 39). Verification of the physiological formulas, performed by applying the abbreviated Weir equation to the respiratory gas volumes, showed a perfect match with the Resting Energy Expenditure (REE) measured by the instrument, with an average deviation of less than 1.5%. From a visual and instrumental perspective, the gas trace pattern confirms the validity of the test: the blue oxygen consumption (VO₂) curve remains consistently above the red carbon dioxide production (VCO₂) curve throughout the test, faithfully reflecting a physiological Respiratory Quotient (RQ) and the accuracy of the calculation of carbohydrate and lipid substrate oxidation. The systematic recalculation of the ratio between measured and theoretically expected values (% Predicted) validated the accuracy of the predictive algorithms integrated in the report at 100%. From a methodological quality perspective, the analysis of the Coefficient of Variability (%CV) demonstrates the excellent overall stability of the test: over 92% of patients showed a %CV of REE significantly lower than the critical threshold of 10% established by the international ESPEN/ASPEN guidelines, confirming the achievement of a perfect steady state during the test. Only two subjects (#15 and #23) showed metabolic and pulmonary ventilation (VP) variability slightly above the cut-off (up to 15.3%), linked to transient irregularities in the respiratory pattern which, however, did not affect the robustness and statistical significance of the aggregate mean data (Table 1).

Data is currently being processed on:

- Normalization of REE for Fat-Free Mass (REE/FFM): Dividing the measured REE by the kg of Fat-Free Mass obtained by BIA will yield the specific metabolic rate of the active tissue. This eliminates the BMI error in muscular or severely obese subjects.

- **Phase Angle (PhA) and Cellular Quality:** PhA (expressed in degrees) measures the integrity of cell membranes and hydration. The clinical hypothesis to be tested is that a higher PhA is directly associated with greater tissue metabolic efficiency (higher REE/FFM) and improved oxidative flexibility (ability to switch to fat oxidation at rest, reducing RQ).
- **Appendicular Muscle Mass (ASMM) and Dynamometry:** By cross-referencing the ASMM kg measured by BIA with the kg of strength measured by Handgrip (Dynamometry), it is possible to calculate the Sarcopenia or Dynapenia index. This will allow us to verify whether the reduction in strength and appendicular muscle influences the decline in REE more than the decline in total body weight.
- **Hydration and Total Body Water (TBW):** Analysis of TBW and the ECW/ICW (Extracellular/Intracellular Water) ratio will help standardize the data: in patients with significant extracellular water retention, BMI is falsely elevated, leading standard predictive formulas (Harris-Benedict/Mifflin) to greatly overestimate needs compared to the measured REE.

Preliminary Conclusions

Preliminary results demonstrate the feasibility and methodological robustness of the protocol, highlighting high stability of calorimetric data and the achievement of steady state in almost the entire sample. The marked anthropometric and clinical heterogeneity of the cohort highlights the inadequacy of standard parameters such as BMI and total body weight in reflecting the true bioenergetic status of patients with eating disorders. Completion of ongoing analyses will clarify the specific impact of body composition (FFM, ASMM, hydration), cellular quality (PhA), and muscle strength (dynamometer) on REE variability. Such integrated insights are essential to overcome the limitations of traditional predictive formulas, optimizing the personalization of therapeutic-nutritional pathways and the prevention of metabolic complications in clinical practice.

Key-words

Resting energy expenditure, indirect calorimetry, BIA, body composition, muscle strength, eating disorders, handgrip, retrospective study.

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PROTEIN-ENERGY WASTING IN HAEMODIALYSIS (HD): ASSOCIATION BETWEEN HYPOPHAGIA, METABOLIC-NUTRITIONAL STATUS, BODY COMPOSITION, AND CLINICAL OUTCOMES

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Introduction: Protein-Energy Wasting (PEW) in HD has a negative impact on quality of life and outcomes. This study analyzed the associations between PEW, hypophagia, and changes in body composition and their impact on hospitalization and mortality at 12 and 24-month follow-up.

Methods: We enrolled adult patients on HD at a single center in the years 2020-2021. Body composition was assessed by BIA. Energy-protein intake was calculated using 3-day food diaries. Hypophagia was defined as an energy intake <30 kcal/kg/day and/or a protein intake <1.2 g/kg/day. Hospitalization and mortality were registered.

Results: 75 patients were included and 26 (35%) were diagnosed with PEW. Patients with PEW showed lower values of phase angle ($p = 0.039$), fat-free mass index (FFMI; $p < 0.001$), ICW/height² (ICW/H² $p < 0.001$) and fat mass index (FMI; $p < 0.001$) compared with those without PEW; 47 patients (63%) met the criteria for hypophagia and exhibited lower FFMI ($p = 0.004$), FMI ($p = 0.005$), BMI ($p = 0.004$), and ICW/H² ($p = 0.005$) compared with those with no hypophagia. In logistic regression analysis, FMI [OR 0.54 (0.33–0.87), $p = 0.011$], energy intake (DEI) [OR 1.00 (0.99–1.00), $p = 0.039$], and normalized protein catabolic rate (nPCR) [OR 0.00 (0.00–0.21), $p = 0.014$] emerged as independent predictors of PEW. Although no differences in hospitalization or mortality were observed according to PEW and/or hypophagia, 70% of patients who experienced at least one hospitalization and 58% of those who died had either PEW or hypophagia.

Conclusion: In HD patients, PEW and hypophagia are prevalent and are associated with changes in body composition. DEI, FMI and nPCR emerged as determinants of PEW. Assessment of dietary intake, together with body composition analysis, is essential to identify patients at risk of PEW or already malnourished and to guide metabolic–nutritional interventions.

Nutritional Management in a Patient with Right Jugular Paraganglioma and Severe Neurogenic Dysphagia: Critical Issues and the Role of Endoscopic Support Prior to Injective Laryngoplasty

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Background

Jugular paragangliomas are rare neuroendocrine tumors of the skull base that can involve the lower cranial nerves (IX–XII). Vagus nerve (X) palsy causes glottic incompetence and laryngopharyngeal hypoesthesia, leading to severe oropharyngeal dysphagia and a high risk of silent aspiration and aspiration pneumonia. Fiberoptic Endoscopic Evaluation of Swallowing (FEES) is the gold standard for defining dysphagia severity and guiding nutritional interventions.

Case Report

We present the case of a 74-year-old male with right jugular paraganglioma and vagal nerve palsy (with a medical history of metastatic prostate adenocarcinoma on stable hormonal therapy, stage IIIa chronic kidney disease, and dyslipidemia), admitted for acute respiratory failure secondary to aspiration pneumonia.

Nutritional assessment revealed a weight loss of approximately 10 kg over the last three months (NRS-2002 = 4). Bioelectrical impedance analysis (BIA) confirmed sarcopenia (FFM 40.5 kg, FM 19.5 kg, VF 7). FEES documented right vocal fold paralysis, glottic incompetence, reduced laryngopharyngeal sensitivity, and salivary pooling. The Penetration-Aspiration Scale (PAS) evaluation showed:

Liquids: PAS 7 (aspiration with ineffective cough)

Pureed/Intermediate: PAS 6–7 (silent aspiration / ineffective cough)

Semisolids: PAS 2–3 (supraglottic penetration) fig 1.

The patient was diagnosed with severe neurogenic dysphagia and because of the sarcopenia, Enteral Nutrition (EN) via Nasogastric Tube (NGT) was performed with a target energy intake of 20 kcal/kg and 1 g/kg/day of protein, alongside speech therapy, pending injective laryngoplasty.

Approximately 20 days from discharge, the patient removed the tube accidentally and NGT reinsertion was attempted in the Emergency Department. Standard transnasal placement failed due to tube arrest at the distal third of the esophagus caused by distal esophageal

spasm. Successful placement was achieved only via gastroenterological endoscopic guide, which allowed overcoming the spasm under direct visualization and permitted EN resuming.
Fig 2

Discussion

Vagal involvement in jugular paragangliomas causes dysphagia in 35–40% of cases, exposing patients to protein-energy malnutrition and recurrent respiratory complications. Although EN via NGT is the first choice for short-term management, esophageal dysmotility or spasms can hinder standard insertion. Collaboration with gastroenterology for endoscopic placement is the most accurate option in order to avoid complications and nutritional delays. When dysphagia is expected to be prolonged (>4 weeks), early transition to a PEG should be considered.

Conclusions

Early nutritional assessment and FEES are essential to prevent aspiration complications and sarcopenia in patients with jugular paraganglioma. In the presence of anatomical or functional placement difficulties due to esophageal spasm, endoscopic guidance is effective and safe. An integrated multidisciplinary approach (Clinical Nutritionist, Speech-Language Pathologist, ENT, Gastroenterologist) ensures the best clinical management.

Figure 1 (formerly Fig. 2): Penetration-Aspiration Scale (PAS) and levels identified in the patient across different consistencies during FEES.

Figure 2 (formerly Fig. 3): Diagram of failed transnasal NGT placement due to distal esophageal spasm and subsequent successful placement under endoscopic guidance.

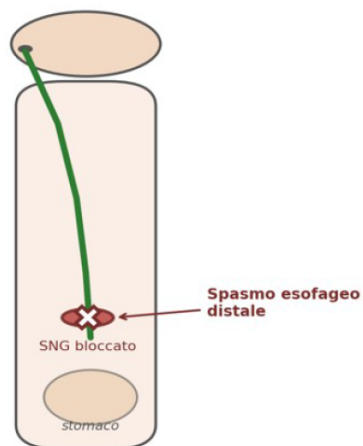
Figura 2 - Penetration-Aspiration Scale (PAS): livelli riscontrati alla FEES per liquidi e semisolidi

Livelli riscontrati nel paziente	
Liquidi PAS = 7	
Cremoso / intermedio PAS = 6-7	
Semisolidi PAS = 2-3	

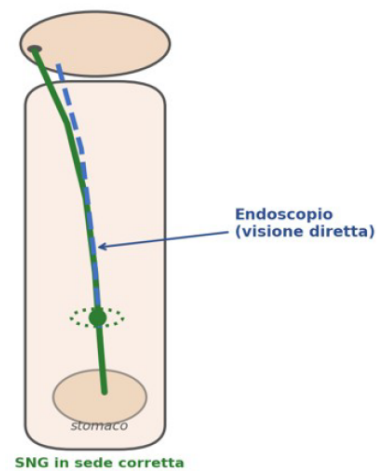
1	Nessuna penetrazione
2	Penetrazione sopra le corde, eliminata
3	Penetrazione sopra le corde, non eliminata
4	Penetrazione a livello delle corde, eliminata
5	Penetrazione a livello delle corde, non eliminata
6	Aspirazione, con tosse efficace
7	Aspirazione, con tosse inefficace
8	Aspirazione silente

Figura 3 - Posizionamento del sondino nasogastrico (SNG): tentativo transnasale (A) e successo con guida endoscopica (B)

A. Tentativo transnasale:
arresto per spasmo esofageo distale



B. Guida endoscopica gastroenterologica:
posizionamento riuscito



Massive Acute Gastric Dilatation Complicated by Transmural Perforation and Colic Ischemia in Bulimia Nervosa

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Introduction: Acute gastric dilatation (AGD) is an ultra-rare, catastrophic complication of one of the most complicated eating disorders such as bulimia nervosa. Massive intraluminal distension can indeed trigger advanced abdominal compartment syndrome (ACS). The resultant critical rise in intra-abdominal pressure compromises mesenteric microcirculation, leading to secondary bowel infarction. This clinical case reports an exceptionally unique presentation of bulimia-induced AGD concurrently complicated by extensive transmural gastric perforation and secondary ischemic necrosis of the terminal ileum and right colon.

Case Presentation: A 23-year-old female with a documented history of bulimia nervosa was observed at the emergency department with diffuse, severe abdominal pain persisting for 24 hours after a massive binge-eating episode not followed by emesis. Physical examination revealed a critical clinical situation: a severely distended, tense, and diffusely tender abdomen, without clear muscular defense. Laboratory evaluation highlighted systemic stress: severe leukocytosis (WBC 14,000/ μ L), marked hyperglycemia (260 mg/dL), hypernatremia (151 mEq/L), and elevated lipases (241 U/L). Direct X-ray of abdomen (fig 1) and an urgent contrast-enhanced CT scan revealed massive gastrectasia extending into the pelvic cavity (fig.2), causing extreme thinning of the gastric walls and compression of all intra-abdominal viscera. The duodenum and the remaining jejunum-ileal loops were displaced to the right, showing fluid-aerobic levels and free fluid accumulation in the left paracolic gutter. Despite immediate conservative attempts via nasogastric and rectal tube decompression, the patient suffered a sudden cardiac arrest 12 hours post-admission. Advanced cardiopulmonary resuscitation achieved return of spontaneous circulation (ROSC). Because of the extreme hemodynamic instability, an emergency exploratory laparotomy was performed. Intraoperative findings confirmed extensive transmural gastric necrosis stretching from the antrum to the cardia with macroscopic perforation. Crucially, the catastrophic increase in intra-abdominal pressure had already caused extensive ischemic necrosis of the terminal 50 cm of the ileum and the entire right colon up to the distal third of the transverse colon. The patient underwent an emergency total gastrectomy with esophagojejunostomy, combined with an extended right hemicolectomy and terminal ileostomy. Postoperatively, she was transferred to the Intensive Care Unit under vasopressor support. However, she developed irreversible multi-organ failure (MOF) and died within 48 hours.

Conclusions: This clinical scenario illustrates the lethal potential of bulimia-induced AGD. The unique involvement of the terminal 50 cm of the ileum and the right colon highlights that massive gastric distension can compromise global mesenteric perfusion through abdominal compartment syndrome. Conservative decompression can cause fatal delays; immediate surgical exploration is mandatory when CT imaging demonstrates severe gastric wall thinning alongside extensive intestinal displacement or vascular compromise.

Fig 1 Direct abdominal x-ray in orthostasis: hydroaerial levels and marked gastric distension

fig 2 . CT scan of the upper abdomen, axial scan at the cranial level: marked gastric dilatation with aeriform levels.

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Against the Expected Trajectory: Continued Weight Loss After Tirzepatide Discontinuation in Two Older Adults

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Background

Tirzepatide induces substantial weight loss in people with obesity, but treatment withdrawal is commonly followed by weight regain. In the SURMOUNT-4 randomized withdrawal trial, participants switched to placebo regained 14.0% of body weight over the subsequent 52 weeks despite continued lifestyle intervention. Subsequent analyses confirmed substantial, although heterogeneous, weight regain after discontinuation. We describe two older adults who continued to lose weight for more than six months after tirzepatide withdrawal while receiving individualized nutritional care.

Methods

Two adults with obesity were longitudinally followed at the Clinical Nutrition outpatient clinic of the Regional Reference Center for Nutritional Pathophysiology (U.O.S. Epatologia e Fisiopatologia della Nutrizione, P.O. Giulianova, ASL Teramo, Italy), before and for >6 months after tirzepatide discontinuation. Neither patient received other medications expected to influence body weight after withdrawal.

Both patients received tirzepatide 2.5 mg/week for the first month, followed by 5 mg/week until treatment discontinuation (Patient 1 started in June 2025 and ended the treatment in January 2026; Patient 2 started in July 2025 and ended the treatment in December 2026). Patient 1 followed an individualized 1700-kcal/day diet providing 55–60 g protein/day, combined with self-selected 60-min daily walking, whereas Patient 2 followed a 1900-kcal/day diet providing 95 g protein/day, combined with swimming three times weekly. Physical activity was prescribed but individually selected according to comorbidities, preferences and feasibility to promote long-term adherence. Serial body weight, anthropometry and bioelectrical impedance analysis (BIA) were assessed throughout follow-up.

Results

Patient 1, a 75-year-old woman with class III obesity (106.3 kg; BMI 42.5 kg/m²), weighed 80.8 kg at tirzepatide discontinuation (–24.0% from baseline). After 6.5 months without

pharmacological obesity treatment, body weight further decreased to 75.5 kg (−6.6% from discontinuation; −29.0% from baseline). Waist circumference decreased from 96 to 87 cm (−9 cm) and fat mass from 36.7% to 33.5%, while BIA-estimated appendicular skeletal muscle mass (ASMM) remained substantially stable (17.6 vs 18.0 kg).

Patient 2, a 73-year-old man with class II obesity (112.3 kg; BMI 38.0 kg/m²), weighed approximately 101.0 kg at discontinuation (−10.1% from baseline). Following a transient early weight fluctuation, body weight progressively decreased to 97.6 kg after approximately 6.7 months (−3.4% from discontinuation; −13.1% from baseline). Fat mass decreased from approximately 30.5% to 28.5%, while BIA-estimated ASMM was similar at the first post-discontinuation and final assessments (26.6 vs 26.8 kg).

Conclusions

Although weight regain is common after tirzepatide withdrawal, these cases demonstrate that continued post-treatment weight loss can occur. In two older adults, individualized dietary treatment combined with sustained, preference-based physical activity was associated with further weight reduction for >6 months after discontinuation, without additional weight-modifying pharmacotherapy. Favorable changes in adiposity occurred without an evident decline in BIA-estimated ASMM.

These observations highlight the interindividual heterogeneity of post-tirzepatide trajectories and support further investigation of the nutritional, behavioral and clinical determinants associated with successful long-term weight management after treatment withdrawal. Structured nutritional follow-up and individually sustainable physical activity may represent relevant factors to investigate in prospective studies aimed at identifying predictors of favorable post-discontinuation trajectories.

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Nutritional screening in inflammatory bowel disease (IBD): a large nationwide patient survey reveals a substantial implementation gap despite a high prevalence of malnutrition risk

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Background:

Inflammatory Bowel Disease (IBD) affects an estimated 250,000 patients in Italy and is associated with a high prevalence of malnutrition(1), which may adversely affect clinical outcomes, increase the risk of surgery and postoperative complications, prolong hospital stay, and reduce quality of life. The 2023 ESPEN guidelines on clinical nutrition in IBD recommend that patients with IBD should be screened for malnutrition at diagnosis and regularly thereafter (Recommendation 4, Grade GPP, strong consensus 100%). However, real-world evidence on the implementation of systematic nutritional screening in routine IBD care in Italy remains limited.

Aim:

To estimate the prevalence of malnutrition risk among patients with IBD using the Malnutrition Universal Screening Tool (MUST) and to assess how frequently nutritional risk assessment is performed by healthcare professionals in real-world clinical practice.

Methods:

A nationwide online survey was designed and administered by the patient association AMICI Italia through its official communication channels and newsletter using the SurveyMonkey platform. The survey included six multiple-choice questions addressing IBD diagnosis, age, previous nutritional risk assessment by a healthcare professional, body mass index (BMI), unintentional weight loss during the previous 6 months, and the presence of acute disease or insufficient nutritional intake for more than 5 days. The latter three domains were used to derive the MUST score. Respondents were classified as being at low (score 0), medium (score 1), or high (score ≥ 2) nutritional risk. Data were analysed descriptively and expressed as percentages of total respondents.

Results:

A total of 3,725 patients responded to the survey. Diagnoses were Crohn's disease in 42.1%, ulcerative colitis in 48.3%, indeterminate colitis in 3.2%, and none/other in 6.4%. Respondents were aged 18–30 years in 12.3% of cases, 31–49 years in 35.9%, 50–69 years in 43.2%, and >70 years in 8.6%.

Overall, 75.5% of respondents reported never having undergone a nutritional risk assessment by a healthcare professional. According to MUST classification, 58.6% were at low risk, 17.6% at medium risk, and 23.8% at high risk of malnutrition. A BMI <18.5 was reported by 10.4% of respondents, while a further 19.1% reported a BMI between 18.5 and 20. Unintentional weight loss >5% during the previous 6 months was reported by 13.0%, and 11.7% reported an acute disease episode or insufficient nutritional intake for more than 5 days.

Conclusions:

In this large nationwide sample of Italian patients with IBD, almost one in four respondents met MUST criteria for high nutritional risk, while approximately three in four reported never having received a professional nutritional risk assessment. These findings highlight a substantial implementation gap between international guideline recommendations and real-world IBD care.

Although the survey population cannot be assumed to be representative of the entire Italian IBD population, if the prevalence observed in this sample were hypothetically applied to the estimated 250,000 people living with IBD in Italy, approximately 60,000 individuals could be at high nutritional risk.

Systematic nutritional screening should therefore become a standard component of IBD care pathways, with validated tools such as MUST incorporated into routine follow-up and predefined referral pathways to dietitians or clinical nutrition specialists for patients identified as being at risk. Patient organisations may also play an important role in identifying unmet needs and supporting the implementation of nutritional screening strategies in routine care.

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Pilot Study on the Role of Nutritional Education as a First-Line Dietary Intervention Combined with Diabetological Assessment in Patients with T2DM Attending Community Health Centres

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Ministerial Decree No. 77/2022 identifies Community Health Centers (Case della Comunità) as a key organizational model for strengthening community-based care and integration across different levels of healthcare. Against this backdrop, the present study explores the potential of a nutritional education intervention for patients with type 2 diabetes mellitus (T2DM) attending Community Health Centers; the intervention is based on educational materials consistent with major clinical guidelines (ADA, DNSG, SID-AMD). The aim is to promote a more efficient care model: to strengthen the community-based management of T2DM, to contribute to improved metabolic control and, consequently, to reduce the healthcare and economic burden on the Italian National Health Care System (Servizio Sanitario Nazionale, SSN).

This study was designed as a pilot, observational, prospective, single-arm, pre-post study involving 20 patients with T2DM (12 men, 8 women; mean age 60.2 years); the population was consecutively selected from patients referred by the diabetologist to the registered dietitian, at the Clinical Nutrition outpatient clinic of the Community Health Centre on Via Gola, ASST Santi Paolo e Carlo, after application of the exclusion criteria. Patients were assessed at enrollment (t0) and after 3 months (t1) using anthropometric measurements (body weight, body mass index, waist circumference), dietary assessment (estimation of the macronutrient composition of the diet), and questionnaires assessing adherence to the Mediterranean diet (PREDIMED, PyrMDS).

Descriptive comparison between t0 and t1 showed a mean reduction in body weight of 1.7 kg (-1.8%), in BMI (from 29.7 to 29.1 kg/m²) — with 3 patients moving from the category of “class II obesity” to “class I obesity” — and in waist circumference (from 106.9 to 106.3 cm). Regarding dietary habits, a central component of the dietary intervention, a reduction in mean energy intake was observed (from approximately 1800 to 1650 kcal/day). Furthermore, there was an improvement in dietary quality, including an increase in mean daily fiber intake (from 18.8 to 23.0 g/day) and a reduction in mean daily saturated fatty acids intake (from 19.0 to 16.3 g/day). These qualitative changes were also reflected in increased adherence to the Mediterranean diet, as assessed by both the PREDIMED questionnaire (from 8.5 to 9.4 points) and the PyrMDS score (from 59% to 64%).

The preliminary descriptive data suggest that a nutritional education intervention, delivered within a Clinical Nutrition outpatient clinic of a Community Health Centre, may be associated with improvements in dietary habits and selected anthropometric parameters in patients with T2DM. Given that, this healthcare setting remains relatively underexplored. This pilot study supports the need for further research in larger cohorts; it would be interesting to determine whether a first-line nutritional intervention model integrated into the network of Community Health Centers could effectively contribute to improved management of T2DM and to reduce the associated burden on the Italian National Health Care System.

More Health in Motion: Fitwalking as an Intervention to Reduce Cardiovascular and Metabolic Risk in People Living with HIV in Turin

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Background

People living with HIV/AIDS (PLWHA) have a higher risk of developing cardiovascular and metabolic diseases compared with the general population. Moreover, approximately 90% are overweight or obese. Among the strategies aimed at reducing cardiovascular, cerebrovascular, and metabolic risk, adequate physical activity, such as fitwalking, plays an important role.

Objectives

To implement a structured program aimed to increasing physical activity levels among PLWHA attending the Division of Infectious and Tropical Diseases I and to assess the associated clinical, metabolic, and functional parameters.

Materials and Methods

Over the past 2 years, 34 adult PLWHA attending the Division of Infectious and Tropical Diseases I were enrolled, including 19 men and 15 women, with a mean age of 54 years. All participants had good virological control with an undetectable viral load. None of the enrolled participants reported engaging in any sports activities. All participants underwent a sports medical examination at the Sports Medicine Unit of the ASL City of Turin, which was required to obtain medical clearance for participation in the fitwalking program. The program consisted of 10 weekly one-hour sessions led by two corporate fitwalking leaders from the Clinical Nutrition Unit and took place in a public park in Turin.

Results

Twenty-one out of 32 participants (65%) attended at least 5 of the 10 scheduled sessions; among them, 6 attended 9-10 sessions. The project outcome indicator for adherence to the sessions was therefore achieved in 65% of the study population, with even higher adherence rates when considering participation in 6-10 sessions. Two participants dropped out of the program.

A statistically significant difference ($p = 0.01$) was observed between mean BMI at T0 ($32.29 \text{ SD} \pm 5.54 \text{ kg/mq}^2$) and mean BMI at T1, at the end of the program ($31.95 \text{ SD} \pm 5.63 \text{ kg/mq}^2$).

17 out of 32 participants (53%) showed a reduction in BMI. Of these, 10 were overweight, 6 had a BMI $>35 \text{ kg/mq}^2$, and 1 had class I obesity.

12 out of 32 participants (37.5%) maintained an unchanged BMI; among them, 5 had class I obesity, 4 were overweight, 2 had a BMI $>40 \text{ kg/mq}^2$, and 1 had a normal weight.

3 out of 32 participants (9.5%) showed an increase in BMI, respectively from 32.92 to 33.25 kg/mq^2 , from 34.71 to 35.71 kg/mq^2 , and from 39.18 to 40.83 kg/mq^2 .

A statistically significant difference ($p = 0.02$) was also observed between mean waist circumference at T0 ($107.83 \text{ } \hat{A} \pm 12.08 \text{ cm}$) and at T1 ($107.10 \text{ } \hat{A} \pm 12.37 \text{ cm}$).

Conclusions

The results support the effectiveness of fitwalking as an intervention to reduce

cardiometabolic risk in people living with HIV. The statistically significant reductions in BMI and waist circumference at T1 represent a meaningful improvement in a population with a high prevalence of overweight and obesity.

The good adherence rate, with 65% of participants attending at least 5 of the 10 sessions, is particularly noteworthy considering that the participants were previously sedentary, and suggests that a structured intervention integrated into the care pathway may promote the adoption of protective health behaviors.

Future studies involving larger populations could further confirm the impact of this intervention and its long-term sustainability.