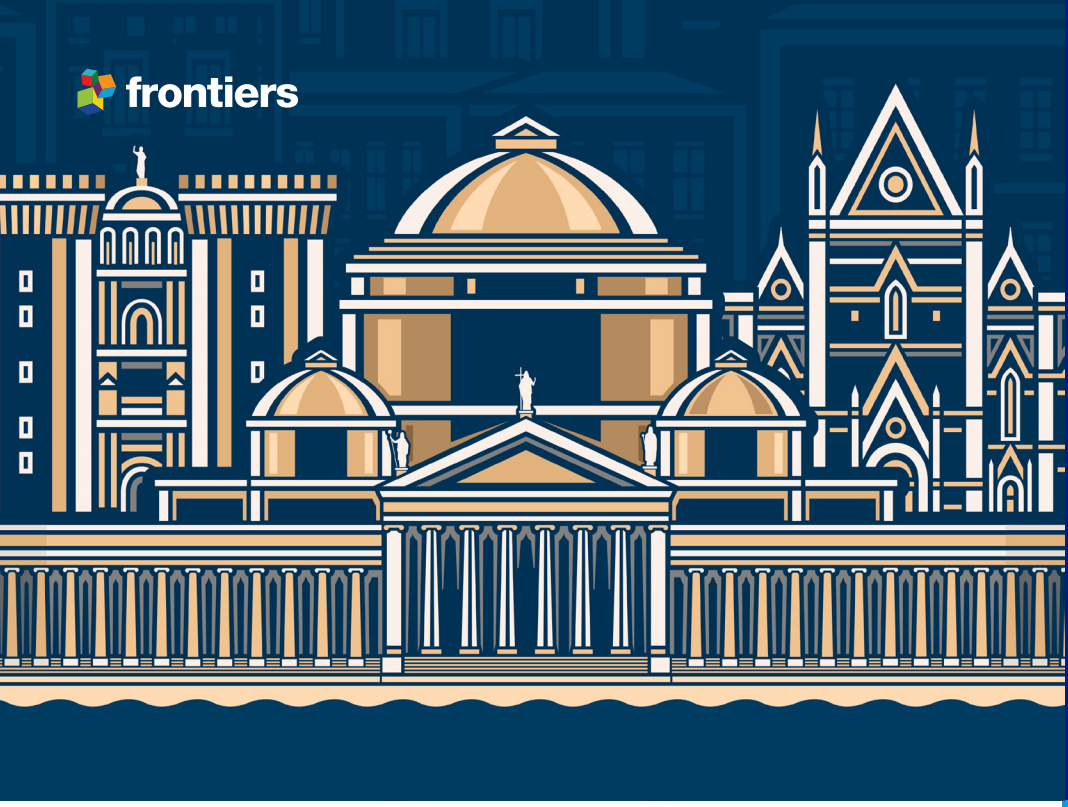

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Welcome to the VIII Congresso Nazionale SINuC (Società Italiana di Nutrizione Clinica e Metabolismo)

The 8th National SINuC Congress represents a unique opportunity for professional development, knowledge exchange, and growth for all healthcare professionals involved in clinical nutrition. The ultimate objective is to provide concrete tools to improve daily clinical practice and, consequently, patients' quality of life, through an integrated and cutting-edge approach to clinical nutrition.

LIST OF ORGANIZERS

SINuC - Società Italiana di Nutrizione Clinica e Metabolismo
Prof. Maurizio Muscaritoli (President SINuC)

Optimization of nutritional status in frail malnourished patients: Effectiveness of oral nutritional supplements (ONS) on clinical outcomes and data on adherence to the prescribed therapy

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Citation
Scopari, A., Zanoni, M.C., Mulazzani, G.E.G., Mikopula, B.P., Marini, M.A., Medri, S., Bertelli, I., Lanzi, P. Optimization of nutritional status in frail malnourished patients: Effectiveness of oral nutritional supplements (ONS) on clinical outcomes and data on adherence to the prescribed therapy.

Background

Undernutrition is a frequent, often underdiagnosed clinical condition, especially in frail, elderly patients and those with chronic diseases. It entails significant clinical, functional, and prognostic consequences: loss of lean mass, reduced immune competence, increased morbidity, mortality, length of hospital stay, and risk of readmission (1). Early diagnosis remains complex due to the absence of universally accepted criteria. In recent years, standardized tools (MUST, SGA, ASPEN, GLIM) integrating anthropometric, functional, dietary, and clinical

parameters, have improved risk identification and enabled more targeted interventions (1). Management of undernutrition follows a stepwise approach: dietary counseling and enrichment, oral nutritional supplements (ONS), and, if necessary, enteral or parenteral nutrition. ONS are foods for special medical purposes formulated to integrate or replace the habitual diet; they are available in various forms, flavors, and compositions. Substantial evidence supports their effectiveness in improving nutritional status, reducing complications and hospital readmissions, enhancing quality of life. However, clinical effectiveness is strongly linked to treatment adherence, which is influenced by multiple factors (socioeconomic, individual, clinical, therapeutic, and organizational) (2,3,4).

Objectives

1. To evaluate the clinical-nutritional efficacy of ONS in malnourished frail outpatients by analyzing anthropometric, biochemical, dietary parameters before/after supplementation.

2. To investigate factors influencing adherence to ONS therapy, classifying them according to the WHO multidimensional model and reinterpreting them based on a recent systematic review (2,5).

Materials and Methods

The study is a retrospective, non-randomized observational analysis including 86 frail patients (mean age 72 years, range 25–92; 45 females, 41 males) followed at the ASST Santi Paolo e Carlo, San Carlo hospital Nutrition Unit, between January 2022 and March 2023.

The clinically heterogeneous sample comprised:

- 64% oncological diseases,
- 17% chronic kidney disease (CKD),
- 8% diabetes mellitus,

- 6% neurological disorders,
- other sporadic cases. All patients were at risk for protein-energy malnutrition (MUST ≥2) and received personalized nutritional counseling and ONS prescriptions. Mean treatment duration was 6.1 months (range 1–20). Analyzed variables included:
- Anthropometric parameters: body weight, BMI;
- Biochemical parameters: serum albumin, total proteins;
- Nutritional intake: spontaneous and total intake (including ONS);
- Adherence factors: facilitators and barriers identified in clinical records, classified according to WHO's five adherence dimensions.Statistical analysis used paired t-tests and Mann-Whitney U tests, with $p<0.05$ considered significant.

Results

ONS prescriptions provided on average 329 kcal/day and 18 g of protein/day.

1. Clinical-nutritional efficacy
    - Spontaneous energy intake increased from 1325 to 1437 kcal/day ($p<0.001$).
    - Spontaneous protein intake increased from 55 to 61 g/day ($p<0.001$).
    - Mean body weight increased from 56.0 to 57.1 kg; BMI from 21.5 to 21.9 kg/m^2.
    - Albumin rose from 3.46 to 3.73 g/dL; total proteins from 6.40 to 6.72 g/dL.
    - Total intake (spontaneous + ONS) reached 1766 kcal/day and 79 g protein/day, corresponding to 30.9 kcal/kg/day and 1.4 g protein/kg/day, consistent with ESPEN and SINPE guidelines (6,7,8).

- Even in clinical subgroups, such as CKD patients, intakes remained appropriate (27.9 kcal/kg/day and 0.8 g protein/kg/day).

2. Adherence to ONS therapy

   - 36 facilitators and 24 barriers were identified.

   - Most frequent facilitators: perception of the importance of supplementation (28%), perceived health benefits (17%), good tolerability (14%), good nutritional status (14%), strong personal motivation (14%).

   - Main barriers: gastrointestinal side effects (29%), delivery issues (21%), swallowing or eating difficulties (13%), lack of social support (13%), low motivation (13%).

   - Additional obstacles: poor taste, excessive volume, early satiety.

   - No barriers were recorded in the condition-related dimension; no facilitators in the healthcare/system-related dimension.

3. Comparison of groups (facilitators vs barriers)

   - Patients with facilitators showed greater improvements in intakes (+21% protein, +13% energy) compared to those with barriers (+8% protein, +9% energy).

   - Differences did not reach statistical significance ($p>0.05$), though they suggest clinically relevant trends.

Conclusions

The study confirms that oral supplementation with ONS is an effective, safe, and well-tolerated intervention for restoring nutritional status in frail patients, leading to significant increases in spontaneous intake and clinical-biochemical parameters (4). Its clinical impact is enhanced by an integrated and personalized dietetic approach, including continuous monitoring,

counseling, and strategies to optimize adherence (2). Post-supplementation intakes aligned with international guidelines, confirming the validity of this approach. At the same time, adherence emerges as a decisive factor: patient's motivation, perceived benefits, social support, and delivery continuity are crucial to ensure clinical effectiveness. Conversely, organizational and subjective barriers, if not addressed, may compromise outcomes.

Strengths and Limitations

- Strengths: adequately sized sample (86 patients), pre-post design with complete data, multidimensional adherence assessment.

- Limitations: retrospective design, lack of a control group, clinical heterogeneity, non-standardized collection of adherence factors. This study underscores the urgent need for validated, prospective tools to assess adherence determinants, ensuring that nutritional therapy is not only prescribed but truly effective. Future prospective studies, with standardized methodologies and control groups, could strengthen these findings and help define more structured care models for the nutritional management of frail patients.

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Home bioimpedance analysis in telemedicine for the assessment and management of the nutritional status of patiens with pressure injuries

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Citation
Solimano, A. Home bioimpedance analysis in telemedicine for the assessment and management of the nutritional status of patiens with pressure injuries.

Cavallo Immacolatadinardo Filomenavenezia Mariagraziaviglioglia Angelovirgilio Roberto

TABLE 1: Level of knowledge in managing HEN in the two groups (trained vs not-trained), expressed as a mean of the rating scale scores

Level of knowledge	Trained (44 pts) (mean, SD)	Not-trained (8 pts) (mean, SD)	P value
Correct performance of manoeuvres	3.7 ± 1.0	2.4 ±1.0	***
Storage conditions of enteral formula	3.6 ± 1.1	2.4 ±1.0	**
General hygiene standards	3.6 ± 1.0	2.4 ±1.0	**
Operation of the pump	3.7 ±1.0	2.6 ±0.9	*

Quantity and time of infusion	3.7 ± 1.1	2.9 ±0.9	*
Correct position of the patient	3.7 ± 0.9	2.9 ±0.9	*
Flushing of the pump	3.7 ± 1.1	2.8 ±0.7	*
Management and dressing of access route	3.3 ±1.4	2.8 ±0.7	ns
Drug administration	3.3 ±1.2	2.7 ±0.7	ns
Occurrence of complications	2.5 ±1.4	1.9 ±1.1	ns
Management of complications	2.3 ±1.3	1.9 ±1.1	ns

Statistics: Student's t- test for paired data : *p<0,05, **p<0,01, ***p<0,001

TABLE 2: Treatment-related complications in the two groups

Treatment-related complications	Whole group % (n)	Trained % (n)	Not trained % (n)
Constipation	44% (23)	45% (20)	38% (3)
Nausea and reflux	35% (18)	34% (15)	38% (3)
Diarrhea	31% (16)	27% (12)	50% (4)
Skin irritation at the tube exit site	35% (18)	34% (15)	38% (3)
Tube dislodgement	25% (13)	25% (11)	25% (2)
Blockage or kinking of the tubing	25% (13)	23% (10)	38% (3)
Persistent cough	19% (10)	16% (7)	38% (3)
Vomiting	12% (6)	7% (3)	38% (3)
Purulent discharge or granulation tissue	4% (2)	0% (0)	25% (2)

Impact of Ruxolitinib on GDF-15, appetite, and body composition in Myelofibrosis patients

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Citation
Gallicchio, C., Tambaro, F., Imbimbo, G., Martellucci, O., Scalzulli, E., Breccia, M., Molfino, A., Muscaritoli, M. Impact of Ruxolitinib on GDF-15, appetite, and body composition in Myelofibrosis patients.

Introduction

Myelofibrosis (MF) is a BCR/ABL-negative myeloproliferative disorder characterized by abnormal clonal expansion of hematopoietic progenitors, bone marrow fibrosis, and systemic inflammation. Cachexia and reduced food intake are often observed in MF, driven by inflammation and splenomegaly. Aim of the present study was to evaluate the impact of Ruxolitinib, a JAK1/2 inhibitor widely used for MF treatment, on changes in body composition.

Methods

We collected data from MF patients before (T0) (n=18) and after 6 months (T1) (n=22) of Ruxolitinib treatment. Nutritional risk and malnutrition were evaluated with MUST and GLIM respectively. Anorexia was assessed with FAACT and body composition estimated with BIA. Sex-specific cut-off values

for Fat Free Mass Index (FFMI, kg/m^2) were made according to ESPEN criteria. Circulating GDF-15 was assessed with xMAP Intelliflex.

Results

At baseline T0, 50% of patients (n=9) were classified at risk of malnutrition (MUST), while 52% (N=11) fulfilled the GLIM criteria for malnutrition. At T1, MUST decreased from 50% to 12%, and GLIM decreased from 52% to 8%. A significant reduction in circulating GDF-15 concentrations was documented from T0 to T1 (p=0,010), as well as a significant increase of FAACT score (35(29;40) vs 41(37;44), p=0,01). Interestingly, changes in GDF-15 levels between T0 and T1 were inversely correlated with changes in FAACT (r=−0.531, p=0.023), FFMI (r=−0.488, p=0.047), muscle mass (r=−0.504, p=0.039), and lean body mass (r=−0.490, p=0.046).

Conclusion

Ruxolitinib treatment was associated with improvements in body composition among patients with MF, which cannot be ascribed only to the reduction of splenomegaly or overall disease control, but also likely to the concomitant decreases in GDF-15 levels, suggesting a potential role of Ruxolitinib in the management of MF-induced anorexia and cachexia.

The oldest-old nursing home guests: Enhanced nutritional assessment by telemedicine

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Citation
Bonardi, C., Sacco, M., Barbato, C., Ferraro, M., Ivaldi, I., Naso, M., Camera, E., Baracco, B., Mazzucchi, V., Guarcello, M. The oldest-old nursing home guests: Enhanced nutritional assessment by telemedicine.

Background and Objectives

Italian oldest-old population (≥ 85 years) is increased by 4,4%, with prevalence at 4,1% (+0,2%), according to ISTAT data 2025. Particularly, institutionalised elderly patients are known for their fragility and for the high risk of malnutrition. Indeed, according to the Italian Society of Gerontology and Geriatrics, the prevalence of malnourishment in this kind of patients has been detected at about 60-70%. In recent years, telemedicine emerged as a good tool capable of enhancing remote patient care. For this reason, numerous clinical trials were launched, and they are still a work in progress. Our project, entitled TeleNutriamo, has the aim to promote and provide remote nutritional support in nursing home facilities, by telematic processes and digital platforms in a range of time of about 4 years.

Methods

The study design includes, after a training meeting, firstly a screening phase, followed by a recruitment and then a scheduled follow-up. Inclusion criteria: oldest-old guests (≥ 85 years), residence in one of the 5 nursing homes participating in the study, positive malnutrition test result, and signed informed consent. Exclusion criteria: denied informed consent. Screening tools: MNA-SF and SARC-F administered once a month.Certified telemedicine device: Tytocare®.

Results

321 patients were screened. Oldest-old patients, over age ≥ 85 y, are 173 (F.84.4% age 92±4.1y) and 11 subjects are ≥ 100 years old. In 48 months of observation 158 resulted positive to MNA-SF: 60.7% risk of malnutrition and 31.8% malnourished. 158 subjects have also SARC-F positive. The prevalence of neurodegenerative disease is 48,1% (F 81,6%) vs. 29,3% (F 88,2%) in patients 65 ≤ y < 85; according with an ISTAT report set in 2019, this data seems in line about prevalence by gender and age progression. To date, 102 subjects are enrolled, 26 under recruitment, 6 patients died before recruitment and 39 left the project. According to GLIM criteria diagnosis, malnutrition is confirmed in 90.4% of the sample enrolled; severe malnutrition in 75.3 %; moderate malnutrition in 15.1% and no patients has mild malnutrition. Baseline characteristics: average weight 54.5 kg±11.5 kg and BMI 22.1±4.1 kg/m 2 . BMI < 20 is documented in 25 subjects (34.3%) of the enrolled sample. BEE(HB) 1020±195 kcal with TEE 1250±180 kcal/die. Daily estimated protein requirement 60.7±13.3 g/die and water 1630±340 ml/die. Required intake is satisfied in almost cases for calories and 39.7% for proteins. The water intake is achieved in 17.5% of the enrolled sample. Average albumin 34±3.9 g/dL, total protein 65±7 g/L. At recruitment 6.9% of the sample has oral nutritional support, 6.8% has pressure ulcers and already diagnosed dysphagia is a comorbility present in 20.6% of subjects. To date, 46 enrolled subjects drop-out: 18 deceased and 28 for other causes.

Conclusions

In summary, telemedicine can be described as a useful technology for remote communication and information that allows medical and

clinical services to be provided to patients in different locations. This is a fundamental feature for treating this type of patient, who are known for their fragility in response to any stressors. Nutritional counselling may be provided by digital platforms or other channels, when appropriate and possible, to minimize unnecessary contact, preserving the clinical stability achieved over time. Other important and positive aspects to mention are: the opportunity to detect and manage earlier patients at risk of malnutrition and/or sarcopenia, and a more cost-effective and incisive management of available professional and economic resources. Depending on human resources availability, the project development could involve body composition assessment through bioimpedance analysis (BIA) in oldest-old guests. Consequently we could have a better evaluation, in order to provide more targeted nutritional intervention and thereby maintaining or improving their quality of life and functional independence.

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Integrated approach in eating disorders: Synergy between nutrition and oral hygiene

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Background and Objectives

Eating disorders (DNA) are psychopathological conditions characterized by severe complexity and fragility that require a multidisciplinary approach. This group of patients is known to suffer from a variety of repercussions, including oral health ones. Clinical manifestations, such as dental erosion, caries,

periodontal disease and xerostomia, are closely related to the eating habits and compensatory behaviours typical of DNA. The effective management of these issues requires a approach that integrates the expertise of various professional figures. This research project describes a collaborative model between nutrition professionals, such as dietitians and nutritionists, and dental hygienists to optimize the care of patients with DNA.

Methods

The study design, conducted at Sant'Andrea Hospital in Vercelli between September 2024 and June 2025, provides an initial screening phase followed by recruitment (T0) and scheduled follow-up (T1, T2, T3) spaced 30 or 60 days apart.Inclusion criteria: age >12; established eating disorder diagnosis accessing to the specialist nutrition clinic first-level outpatient; provided informed consent. Exclusion criteria: missed diagnosis (1); informed consent denied.Screening Tools: questionnaire item-26.

Results

39 screened patients (F 92.3%; average age 27.8±16.1y). To date 34 subjects were enrolled. Sample diagnosed: BED 41%; AN-R 33.3%; BN 10.3%; DNA-NAS 2.6% and 4 subjects are awaiting a diagnosis. Baseline characteristics: average weight is 69.7±27.5 kg, average height 1.62±0.08 mt and average BMI is 26.4±9.2 kg/m2. According to GLIM criteria 29.4% of patients results malnourished. Average HB-BEE is 1527 kcal/day±309 kcal/day; TEE, stress factor value adapted to the subject's age, is 1900±294 kcal/day. Nutritional analysis revealed that 38% of patients had episodes of self-induced vomiting and 35% of binge eating, behaviours that, in addition to negatively affecting nutritional status, cause damage to dental structures. The dental hygienist, through a dental clinical examination, recorded: DMFT (decayed, missing, filled teeth), PCR (Plaque Control Record), GBI (Gingival Bleeding Index), OHI-S (Oral Hygiene Index-Simplified), and WTCI (Winkel Tongue Coating Index). The results highlighted: Poor plaque control (mean PCR above 30% in all assessments), indicating inadequate oral hygiene even after educational and motivational interventions. High presence of tongue coating (persistently elevated WTCI), confirming ongoing difficulties in daily oral

hygiene management. Apparently good gingival health (mean GBI below 25%), with no acute inflammation or significant bleeding, but with a potential long-term risk of progression to periodontal disease without preventive measures. Limited incidence of hard tissue pathologies (mean DMFT 4.26), suggesting a lower immediate impact on caries and restorations, but with risk perspectives linked to inadequate dietary behaviours. The questionnaire analysis also revealed significant data regarding lifestyle and nutrition: frequent consumption of sugar drinks and cariogenic foods, insufficient hydration, weight-control practices and widespread body dissatisfaction. Many patients reported not attending regular dental check-ups, confirming limited preventive attention. The findings confirm that oral health in patients with DNA is strongly influenced both by unhealthy dietary habits and by suboptimal management of daily oral hygiene. Despite an apparently preserved gingival condition, plaque control is inadequate and persistent tongue coating represents a significant risk factor. At the same time, nutritional habits reveal diets often rich in simple sugars, acidic beverages, and poor hydration, all elements are widely associated with enamel erosion, caries, and mucosal dysfunctions. Body dissatisfaction, constant weight monitoring and dysfunctional food-related behaviours underscore the close connection between psychological factors and oral health. Another critical issue is the irregularity of dental check-ups: while some patients follow preventive recommendations, a significant proportion visit the dentist only in emergencies or not at all. This behaviour delays the early diagnosis of oral complications. Overall, the results indicate that it may be useful to extend the approach to other professional figures as dental hygienist, in addition to usual multidisciplinary team. Oral damage can be prevented through integrated care, while supporting patients' overall recovery.

Conclusions

The collaborative model is structured into integrated assessment, targeted intervention, and continuous patient education. The integration of these two care pathways allows to provide patients with targeted nutritional advice and oral hygiene instructions that are mutually supportive. Indeed, in some cases, patients didn't openly disclose their actual eating habits. In this regard,

multidisciplinary collaboration with dental hygienists is useful in making nutritional assessments more comprehensive, especially when undeclared elimination behaviours were present. Moreover, dental care could improve patient adherence to nutritional prescriptions, taking account of their care for aesthetic outcomes. The aim is to break the cycle of damage and promote the recovery of both nutritional and oral health. In other words, the proposed interdisciplinary approach leads to improve clinical outcomes, enhance the efficacy of long-term treatment, and promote patients' overall well-being. Further data are required to evaluate the follow up in this specific patient.

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Combined clinical nutrition plus meal-feeding approach for refeeding extreme Anorexia Nervosa restrictive type hospitalized patients: Cognitive and physical recovery is possible in day-hospital setting with a multidisciplinary team. A pylot study

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Citation
Savina, C., Di Bonifacio, M.T., Di Leonardo, F., Rapini, B., Lanci, M., Palladini, F., Di Sante, D. Combined clinical nutrition plus meal-feeding approach for refeeding extreme Anorexia Nervosa restrictive type hospitalized patients: Cognitive and physical recovery is possible in day-hospital setting with a multidisciplinary team. A pylot study.

Introduction

About 10 years ago, a Systematic Review (SR) on refeeding in undernutrition in Anorexia Nervosa (AN) in a hospital setting highlighted that hypercaloric feeding was feasible in moderate undernutrition using assisted meal approaches or combined approaches such as oral nutritional supplements (ONS) or enteral nutrition (EN) via nasogastric tube (NGT), under close medical supervision, promptly correcting any electrolyte disturbances. However, in patients with severe undernutrition there was insufficient evidence. Furthermore, total parenteral nutrition (TPN) was not recommended unless no other form of refeeding was possible (1). Subsequently, a study conducted in a specialized hospital setting for Nutrition and Eating Disorders (NED) demonstrated that rapid hypercaloric refeeding, under careful medical supervision, supplementing with phosphate, thiamine and electrolytes as needed, was found to be safe even in patients with extreme malnutrition (BMI $\leq$ 13 kg/m2) with Anorexia Nervosa (2).

Aim of the Study

In our study, we proposed a combined refeeding approach in cases of restrictive extreme Anorexia Nervosa who were unresponsive to outpatient treatment in a multidisciplinary team, with weekly, fortnightly, or monthly meetings based on the severity of the clinical case, or who refused residential hospitalization. We proposed DH treatment in a multidisciplinary team aimed at resolving malnutrition by default, defining the following categories of restrictive AN as indicated by the DSM-5:1. Mild Malnutrition: BMI $\geq$ 17 kg/m22. Moderate

Malnutrition: 16 kg/m2 ≤ BMI < 16.99 kg/m23. Severe Malnutrition: 15 kg/m2 < BMI < 15.99 kg/m24. Extreme Malnutrition: BMI ≤ 15 kg/m2MethodFor patients with severe AN referred to the Operative Unit in the first half of 2025, a combined nutritional approach with a multidisciplinary team was proposed, in a Day-Hospital setting, according to the following modality:

- Access 5 days a week, Monday to Friday, from 8:00 a.m. to 2:00 p.m.
- On-site and off-site meals based on medical prescription
- Hospital meal assistance provided by a dietitian or nurse, with crisis management through psychological support
- Nutritional assessment, skinfold measurement, and 50Hz BIA upon admission, discharge, and monthly
- Nutrition plan reviews with the dietitian upon admission, upon discharge, and twice a week (Monday and Friday)
- Psychiatric visit upon admission, upon discharge, and once or twice a week depending on the severity of the clinical case
- Clinical psychological interview and psychometric tests upon admission and discharge
- Weekly individual psychotherapy upon admission, upon discharge, and once or twice a week depending on the severity of the clinical case
- Group psychotherapy, once a week

- Parent training every two weeks.The nutritional intervention was structured in two steps:

1. Artificial nutrition intervention + ONS + hospital meals:

- Enteral nutrition via SNG in patients who accepted SNG placement + ONS based on amino acids and HMB

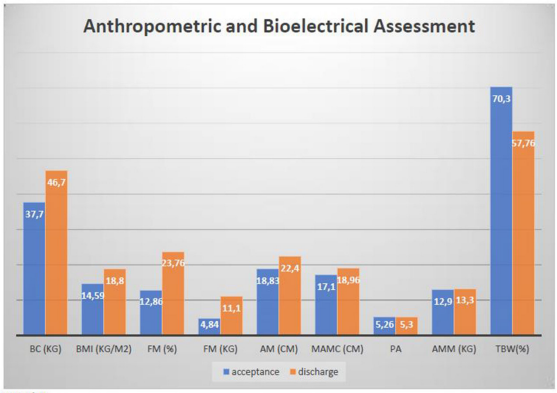
- Peripheral parenteral support via PICC placement in patients who refused SNG placement + ONS based on amino acids and HMB

2. Gradual weaning from artificial nutrition + ONS + hospital meals. Artificial nutrition support, both enteral and parenteral, was aimed at promoting coverage of calorie and protein requirements, rehydration, and weight recovery, while optimizing body composition. To promote protein anabolism, in addition to artificial nutrition support, amino acid + HMB supplementation was prescribed. The hospital meal provided at lunch was a standard hospital meal, with various options, containing approximately 850 kcal and 40 g of protein (48% carbohydrates, 32% fat, 20% protein) and consisting of a first course, a second course, a side dish, bread or potatoes, and fruit. Patients' meal choices were recorded by the department's dietitians. Any leftovers were recorded using a weekly form specifically designed by the department's dietitians. The meal was served and consumed in groups in a dedicated dining area under the supervision of a suitably trained staff member (psychologist, dietitian, nurse). The meal was consumed within 30-40 minutes. After the meal, patients observed a rest period during which they were instructed not to exercise or use the restrooms, which were kept closed for the entire rest period.

Results

Through a standardized artificial nutrition protocol in a DH setting, it was possible, without resorting to residential hospitalization:

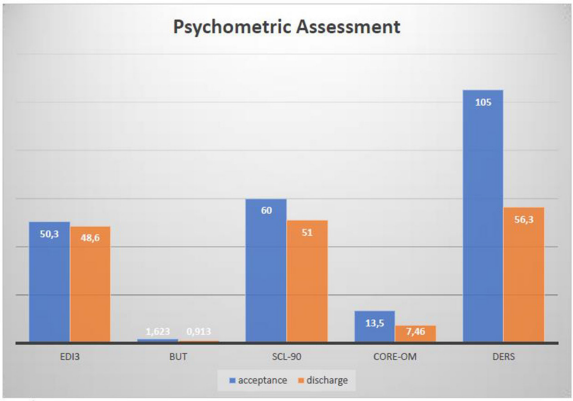
- Overcoming moderate to extreme malnutrition, achieving mild malnutrition and returning to an outpatient setting
- Reduction in passive mobility
- Avoidance of out-of-region hospitalization
- Improved logistics for caregivers
- Continuation of successful school/university studies (promotion to the following year, passing university exams, participation in competitions)
- Improved mood
- Reduction in intrusive thoughts and dysfunctional behaviours
- Reduction in body dysmorphic disorder. Twenty days after starting artificial nutrition, the patients showed less ego-syntonic thinking, insight into their illness with requests for help, and improved compliance with the multidisciplinary intervention, accepting changes to their hospital meals and home medical nutritional therapy. Body dysmorphic perception persists, especially postprandially, when associated with a reality check such as abdominal tension, which exacerbates intrusive thoughts related to cognitive dietary restriction. Along with stabilizing eating behaviour and regaining body weight, individual psychotherapy aimed to strengthen personal identity, reduce chronic self-criticism, increase self-understanding, increase cognitive and relational flexibility, and improve overall functioning. A certain vulnerability persists in situations of emotional stress, which was also addressed in relapse prevention planning. Practical tools and a personal map of warning signs and coping strategies were provided. See Figure 1 (Graph 1) and Figure 2 (Graph 2).



Graph 1

FIGURE 1 (Graph 1)

BW = Body Weight; BMI = Body Mass Index; FM = Fat Mass; AC = Arm Circumference; MAMC =Mid Arm Muscle Circumference; PA = Phase Angle; AMM = Appendicular Muscle Mass' TBW = Total Body Water.



Graph 2

FIGURE 2 (Graph 2)

EDI-3 = Eating Disorder Inventory– 3; SCL-90-R = Simptom Check List–90 – Revised; CORE-OM = Clinical Outcome in Routine Evaluation–Outcome Measure; BUT = Body Uneasiness Test; DERS = Difficulties in emotion Regulation Scale.

Conclusions

The small sample size needs to be expanded to validate this combined, multidisciplinary approach, which appears to confirm the importance of a person-centered treatment capable of comprehensively addressing the biological, psychological, and social components of the illness in patients with extreme restrictive anorexia nervosa in a DH setting.

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The dietitian's role in the multidisciplinary team of cancer patients. experience with residential dietitian at the subalbine onco-hematological center (COES) of the university hospital citta' della salute e della scienza in Turin

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Citation
Mazzetto, E., Chiarotto, A., Allegro, B., Brossa, L., Capuano, F., De Vecchi, M., Agnello, E., Cravero, L., Bo, S., Mancino, M.V. The dietitian's role in the multidisciplinary team of cancer patients. experience with residential dietitian at the subalbine onco-hematological center (COES) of the university hospital citta' della salute e della scienza in Turin.

Background and Aims

In cancer patients, good nutritional status can ensure better clinical outcomes and a better quality of life. To raise awareness of this, a residential dietetic program has been launched at the COES of the University Hospital Città della Salute e della Scienza in Turin.

Methods

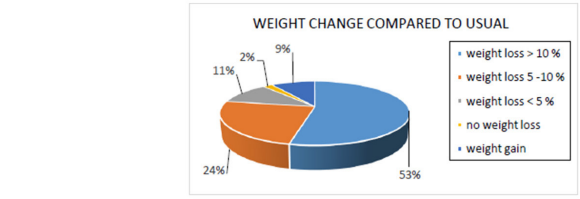
Observational study of adults with solid tumors undergoing active treatment, conducted from March to August 2025. A Dietitian will be present four days a week to care for and monitor patients at risk of malnutrition. Individualized nutritional interventions will be provided: nutritional counseling; prescription of oral nutrition supplements (ONS); Artificial Nutrition (AN).

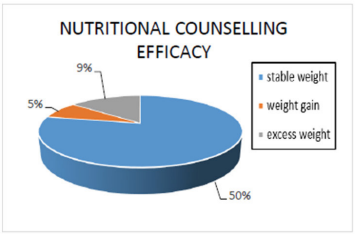
Results

114 initial assessments and 212 dietary checks were performed (Fig. 1).

Conclusions

The Dietitian has cared for 114 patients, of whom only 5% required a Medical Nutrition assessment and only 1% were started on Parenteral Nutrition. Nutritional counseling has proven to be as effective as ONS in determining weight maintenance/gain. The Dietitian's constant presence, the multidisciplinary work carried out with other healthcare professionals, and close follow-up have proven beneficial in the treatment of cancer patients, even in the absence of instrumental nutritional assessments, which will be initiated shortly.





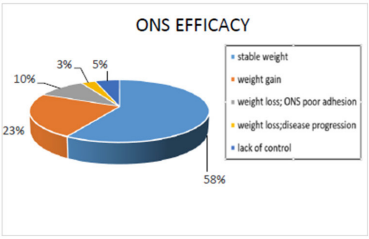


FIGURE 1

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Generalized pustular psoriasis and catheter-related infections: The crucial role of vascular access management in a complex clinical case

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Citation
Petroselli, f. Generalized pustular psoriasis and catheter-related infections: The crucial role of vascular access management in a complex clinical case.

Background
Catheter-related bloodstream infections (CRBSIs) represent a significant complication in patients with long-term vascular access, particularly in the presence of complex skin conditions such as generalized pustular psoriasis, which can compromise skin integrity and increase the risk of bacterial colonization and recurrent infections.

Materials and Methods
We report the case of a 76-year-old woman with generalized pustular psoriasis and multiple comorbidities. During hospitalization, the patient developed persistent fever and recurrent bacteremia associated with infections caused by Staphylococcus haemolyticus, Corynebacterium striatum, and other pathogens, related to a central venous catheter (CVC).

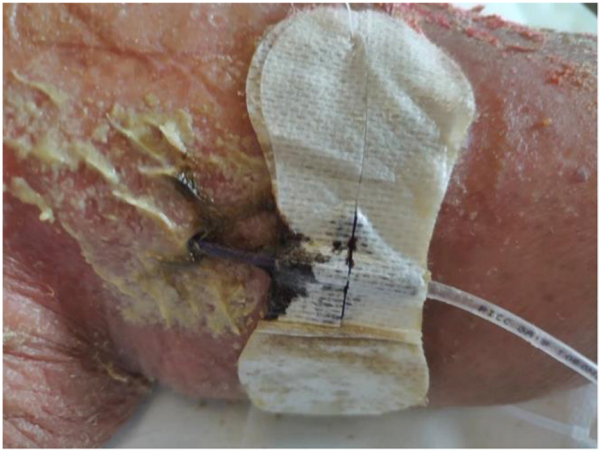

FIGURE 1
Pseudo Tunneling Technique. The needle enters distally (**B**) to the point where it is intended to enter the vessel (**A**), through a subcutaneous tract.

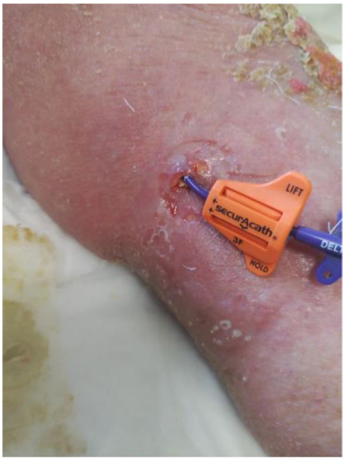

FIGURE 2
The abundant skin secretion made the management of the dressing extremely difficult with the need for frequent changes.

Due to difficulties managing the CVC caused by extensive skin involvement, a peripherally inserted central catheter (PICC) was placed using a pseudotunneling technique (Fig. 1) in an area of intact skin, combined with a rigorous infection prevention strategy, including lock therapy with taurolidine followed by colistin.

Results

In the context of severe skin impairment characterized by widespread pustular lesions (Fig. 2) and limited availability of unaffected skin areas, it was possible to preserve the PICC and maintain its use until clinical improvement was achieved. Despite initial infectious complications, the patient showed progressive clinical and cutaneous improvement, normalization of inflammatory markers, and clearance of blood cultures, allowing discharge in stable condition.

Conclusions

This case highlights the challenges in managing vascular access in patients with pustular psoriasis and persistent catheter-related infections. A multidisciplinary approach, the use of advanced catheter placement techniques, and individualized prevention protocols—such as pseudotunneling and lock therapy—can improve clinical management and reduce infectious complications in this vulnerable population.

Integrated myomiRs and stress cytokine profiling reveals the molecular signature of cachexia in patients with chronic hearth failure

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Citation
Tambaro, F., Imbimbo, G., Orlando, S., Gallicchio, C., Molfino, A., Muscaritoli, M. Integrated myomiRs and stress cytokine profiling reveals the molecular signature of cachexia in patients with chronic hearth failure.

Introduction

Cardiac cachexia (CC) is a severe complication of chronic heart failure (CHF), affecting up to 40% of patients and associated with poor prognosis and mortality. Reliable biomarkers for early detection and risk stratification are still lacking. Circulating myomiRs (miRs) and stress-responsive cytokines, such as growth differentiation factor-15 (GDF-15) and fibroblast growth factor-21 (FGF-21), have been implicated in muscle wasting, inflammation, and metabolic stress. We investigated whether combined profiling of miRs, GDF-15, and FGF-21 could reflect the catabolic–anabolic imbalance and structural remodeling associated with this syndrome.

Methods
We studied 25 CHF patients and 10 healthy controls (HC). CC was diagnosed according to Anker's criteria. Circulating miRs were quantified by RT-qPCR, while GDF-15 and FGF-21 by ELISA. CHF were analyzed according to cachexia status (CC vs nCC) and as having reduced (HFrEF) or preserved ejection fraction (HFpEF). Associations with New York Heart Association (NYHA) classes and left ventricular mass index (LVMI) were evaluated.

Results
In CHF, miR-15b and -486 were downregulated in both CC/nCC vs HC ($p<0.05$), along with downregulation of miR-29b between CC vs nCC ($p=0.019$) and vs HC ($p<0.001$). Upregulation of GDF-15 was observed in both CC/nCC vs HC ($p<0.001$), while FGF-21 levels were upregulated in CC vs HC ($p<0.05$) and between CC vs nCC ($p=0.012$). miR-29b was lowest in HFrEF+CC compared with HFpEF+nCC ($p=0.019$). FGF-21 was higher in HFrEF than HFpEF ($p = 0.039$), and in NYHA III versus II ($p=0.05$). GDF-15 correlated positively with miR-29b and miR-486 in CHF, while FGF-21 correlated inversely with LVMI and miR-486 in CC.

Conclusions
CHF is associated with a distinct molecular profile of myomiRs downregulation and stress cytokine elevation. In CC, these alterations intensify, highlighting miR-29b, GDF-15, and FGF-21 as promising biomarkers of disease progression. Further investigations are ongoing to clarify their potential involvement in the mechanisms driving CC.

Maximum bite force as a simple screening tool for malnutrition and sarcopenia risk in older adults undergoing dental surgery

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Citation
Tambaro, F., Gallicchio, C., Assanto, E., Poli, O., Fusco, G., Muscaritoli, M. Maximum bite force as a simple screening tool for malnutrition and sarcopenia risk in older adults undergoing dental surgery.

Introduction
Chewing impairment may alter food quality and quantity, increasing the risk of malnutrition and sarcopenia in older adults. Maximum bite force (MBF) is considered the most reliable parameter of masticatory function. However, its potential use as a simple screening tool for nutritional risk in dental practice remains unexplored.

Methods
A pilot study was conducted in 38 older adults undergoing minor or limited/extended (LIM/EXT) dental surgery. Nutritional status was assessed with the Mini Nutritional Assessment–Short Form (MNA-SF), and weight changes over the previous 6 months were recorded. Body composition was estimated by bioelectrical impedance analysis (BIA), with sex-specific fat-free mass index

(FFMI) cut-offs (≤16.8 kg/m^2 women, ≤19.1 kg/m^2 men). Muscle function was measured by handgrip strength (HGS) and the 6-minute walking test (6MWT). MBF was measured using a digital gnathodynamometer.

Results

MBF was significantly higher in normally nourished patients (n=30) compared to those at risk or malnourished (n=8, p=0.028). A combined effect of surgery type and nutritional status was observed: LIM/EXT patients with malnutrition (n=7) showed significant reductions in HGS (p=0.029), 6MWT (p=0.047), and MBF (p=0.004) compared to minor with normal status (n=18). MBF was also lower in LIM/EXT patients with low FFMI (n=7) versus minor with high FFMI (n=8, p=0.036), and in LIM/EXT patients with weight loss (n=6) compared to MILD with weight stability (n=15, p=0.014).

Conclusions

Older adults with malnutrition, low FFMI, or weight loss exhibit marked reductions in MBF and muscle function after surgery. MBF may represent a practical early tool to identify patients at nutritional risk during dental visits, supporting timely referral to Clinical Nutrition specialists. Larger studies are ongoing to validate these preliminary findings and to define clinical thresholds for risk stratification.

Longitudinal changes of body composition parameters are associated with clinical outcomes in HER2-Positive metastatic breast cancer receiving trastuzumab deruxtecan

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Citation
Imbimbo, G., Pisegna, S., Scagnoli, S., Alabiso, C., Ardovino, M., Gallicchio, C., Rizzo, V., Botticelli, A., Muscaritoli, M., Molfino, A. Longitudinal changes of body composition parameters are associated with clinical outcomes in HER2-Positive metastatic breast cancer receiving trastuzumab deruxtecan.

Introduction

Breast cancer represents a major global health issue, and HER2-positive metastatic cases remain particularly challenging to manage, even with recent targeted treatments such as Trastuzumab Deruxtecan (T-DXd). This study aimed to assess how changes in body composition affect treatment-related toxicities, dose adjustments, and clinical outcomes in patients undergoing T-DXd therapy.

Methods

A retrospective study was conducted on 35 HER2-positive metastatic breast cancer to evaluate body composition parameters, including subcutaneous adipose tissue (SAT), visceral adipose tissue (VAT), skeletal muscle area (SMA), and skeletal muscle index (SMI). These parameters were assessed using CT scans performed at baseline (T0) and after a median follow-up of 4 months (T1). The percentage change between the two time points (ΔT0–T1%) was calculated for each parameter.

Results

Significant reductions overtime were observed in SAT (mean ΔSAT% =-5.7%, $p < 0.05$) and SMA (mean ΔSMA% = -4.9%, $p<0.01$). 31% of patients experiencing severe (Grade 3-4) toxicities. Patients with higher ΔSAT% (above the median value) experienced more frequently grade 3-4 toxicities compared to those with lower ΔSAT% ($p<0.05$). Among patients without toxicities, a significant decrease in SAT was observed between T0 and T1 ($p=0.003$), while no significant change was detected in patients with grade 3-4 toxicities ($p=0.929$).Greater reductions in SMA were associated with increased rates of treatment discontinuation (75% vs. 29%, $p=0.009$). Kaplan-Meier analysis confirmed that greater reductions in SMA significantly increased the risk of mortality (HR 5.1, 95% CI: 1.05–24.79) and showed a trend toward higher risk of disease progression (HR 2.58, 95% CI: 0.89–7.49).

Conclusions

Changes in body composition, particularly reductions in SMA, were linked to higher rates of treatment discontinuation and mortality in patients with HER2-positive metastatic breast cancer receiving T-DXd. Conversely, increased SAT was associated with greater severe toxicities, underscoring its potential role in predicting treatment-related complications.

Elevated Lipocalin-2 levels are associated with weight loss and anorexia in patients with gastrointestinal cancer

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Citation
Imbimbo, G., Tambaro, F., Orlando, S., Gallicchio, C., Muscaritoli, M., Molfino, A. Elevated Lipocalin-2 levels are associated with weight loss and anorexia in patients with gastrointestinal cancer.

Introduction

Cancer-associated anorexia is a frequent and debilitating condition that contributes to weight loss, sarcopenia, and poor prognosis. Lipocalin-2 (LCN2), a pleiotropic mediator of inflammation and metabolism, was identified as a key regulator of appetite. Experimental models showed that LCN2 deletion protects against anorexia and cachexia, but translational evidence in humans remains limited. In this study, we investigated the association between circulating levels of LCN2 and anorexia in a cohort of naïve gastrointestinal cancer patients (GI-CP) and assessed their association with changes in body composition.

Methods
We conducted an observational study including 28 GI-CP at diagnosis, before anticancer treatments, and 10 healthy controls (C). Clinical, nutritional and biochemical data were collected. Anorexia was assessed by the FAACT questionnaire (cutoff ≤30). Serum LCN2 was measured by ELISA.

Results
LCN2 levels were significantly higher in GI-CP compared to C ($p<0.01$). LCN2 correlated inversely with BMI in GI-CP ($p=0.028$; $r=-0.430$). GI-CP with weight loss (n=16) showed significantly higher LCN2 levels than weight-stable GI-CP (n=12) ($p=0.031$) and vs C ($p=0.003$). Stratification by presence/absence of anorexia revealed that anorexic GI-CP (n=13) showed significantly higher LCN2 levels compared C (n=8) ($p=0.008$).

Conclusions
Our findings provide novel evidence linking circulating LCN2 with weight loss and impaired nutritional status in gastrointestinal cancer. The inverse association with BMI and higher levels in anorexic patients support hypothesis of LCN2 as an appetite-suppressing mediator in GI-CP. Further studies are warranted to clarify its role in the pathophysiology of cancer-associated anorexia.

Histomorphological and inflammatory differences between subcutaneous and visceral adipose tissue in cancer patients

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Citation
Imbimbo, G., Tambaro, F., Carletti, R., Orlando, S., Rizzo, V., Belloni, E., Nigri, G., Muscaritoli, M., Molfino, A. Histomorphological and inflammatory differences between subcutaneous and visceral adipose tissue in cancer patients.

Introduction

We previously examined histomorphological features and inflammatory infiltrates in subcutaneous adipose tissue (SAT) of patients with cancer cachexia and observed decreased adipocyte size, increased fibrosis and inflammatory infiltration. The present study aimed to compare SAT and visceral adipose tissue (VAT) with respect to their histomorphological characteristics and inflammatory infiltration among cancer patients.

Methods

We enrolled gastrointestinal cancer patients undergoing surgery. Biopsies of SAT and VAT were collected for histomorphological analyses (cross-sectional

area-CSA and fibrosis) and immunohistochemistry to characterize inflammatory cells. CT scans at L3 were used to quantify SAT, VAT, and total adipose tissue (TAT) areas.

Results

Biopsies were obtained from 15 patients (8 females) with a mean age of 65 ±11.9 years. Twelve presented with colon cancer and 3 with gastric. Cachexia was present in 8 patients. No differences were observed between cachectic and non-cachectic patients in histomorphological or immunohistochemical analyses. However, a trend toward an increased number of T lymphocytes in SAT was observed in cachectic (2.5; 0.6–6.4) vs non-cachectic patients (0.9; 0.5–6.7)($p=0.072$). In all patients, a higher number of macrophages and T lymphocytes were present in VAT vs SAT ($p<0.05$ and $p<0.03$, respectively). In non-cachectic patients, T-lymphocyte infiltration was higher in VAT vs SAT ($p=0.018$), while no differences were observed in the other parameters. According to adiposity measured by CT-scan, TAT positively correlated with the CSA of SAT (rho=0.671; $p=0.006$) and negatively with the number of CD3 in VAT (rho=-0.557; $p=0.031$). Also, CSA of VAT negatively correlated with the number of macrophages in VAT (rho=-0.670; $p=0.006$) and SAT (rho=-0.640; $p=0.006$).

Conclusion

VAT showed greater immune cell infiltration than SAT in cancer patients. While no significant cachexia-related differences were found, trends toward increased T-lymphocyte infiltration of SAT in cachexia and correlations between adiposity, adipocyte size, and immune infiltration suggest depot-specific roles of adipose tissue in cancer.

Distinct miRNA profiles in subcutaneous vs. visceral adipose tissue and their association with adiposity assessed by CT-scan in patients with gastrointestinal cancer

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Citation
Imbimbo, G., Tambaro, F., Pace, V., Orlando, S., Belloni, E., Nigri, G., Rizzo, V., Amabile, M.I., Muscaritoli, M., Molfino, A. Distinct miRNA profiles in subcutaneous vs. visceral adipose tissue and their association with adiposity assessed by CT-scan in patients with gastrointestinal cancer.

Background
Metabolic and nutritional alterations linked to cancer frequently result in substantial adipose tissue wasting, accompanied by distinct remodeling processes in subcutaneous (SAT) and visceral (VAT) fat depots. Although microRNAs (miRNAs) are known to regulate adipose tissue function, their depot-specific expression patterns in cancer patients remain poorly understood. This study aimed to investigate and compare the expression

levels of selected miRNAs—miR-26a, miR-128, miR-144, miR-155, and miR-181a—in both SAT and VAT obtained from the same gastrointestinal cancer patients undergoing surgery, in comparison to control subjects.

Methods

We conducted a cross-sectional study involving gastrointestinal cancer patients and control subjects undergoing surgery for either tumor resection or non-malignant conditions, respectively. During the procedures, adipose tissue samples from both SAT and VAT depots were collected. Expression levels of selected miRNAs were analyzed using quantitative real-time PCR (qRT-PCR). Body composition was evaluated through CT imaging at the L3 vertebral level to quantify total adipose tissue (TAT) and categorize participants according to adiposity level (high vs. low).

Results

Gastrointestinal cancer patients (n=17) compared to controls (n=5) showed higher expression of miR-128 in both SAT and VAT ($p<0.05$), miR-155 in VAT ($p=0.018$), and lower miR-181a in VAT ($p<0.01$). Within cancer group, miR-26a and miR-128 were lower in VAT than in SAT ($p<0.001$), while miR-155 levels were higher in VAT than in SAT ($p<0.001$). MiR-26a was consistently higher in SAT regardless of adiposity level, while miR-128 and miR-144 showed depot- and adiposity-dependent variations, with notable downregulation of miR-128 in VAT from low-adiposity patients and lower miR-144 in SAT from high-adiposity individuals. MiR-155 was elevated in VAT from low-adiposity patients, whereas miR-181a expression remained unchanged across depots and adiposity levels.

Conclusions

This is the first human study to compare miRNA expression in both SAT and VAT from the same gastrointestinal cancer patients, stratified by adiposity level, showing depot-specific miRNA regulation. Given the known biological functions of certain miRNAs, our findings indicate that VAT is

particularly susceptible to inflammatory and metabolic disturbances, with miR-155 emerging as a promising biomarker of visceral fat remodeling. The distinct miRNA expression profiles observed in SAT and VAT may offer new therapeutic targets to counteract adipose tissue wasting and metabolic dysfunction in cancer patients.

Assessing the efficacy of home enteral nutrition programs in reducing hospitalizations in the elderly: Insights from the INRCA experience

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Nikolina Jukic Peladic – Vivisol srl
Debora Sparvoli – Vivisol srl

Citation
Giulioni, G., Campanari, A., Fraternale, C., Accorsi, R., Venturini, C., Orlandoni, P., Peladic, N.J., Sparvoli, D. Assessing the efficacy of home enteral nutrition programs in reducing hospitalizations in the elderly: Insights from the INRCA experience.

Background

Hospitalizations in older adults represent a major burden for healthcare systems and patient well-being, especially in Italy where individuals aged 65 and older account for more than half of acute hospitalization costs. Home Enteral Nutrition (HEN) is increasingly used for managing frail older patients, but this population remains at high risk for complications and hospitalizations.

Objective
To assess hospitalization rates, causes, and outcomes among elderly patients treated with HEN and identify strategies to improve care delivery and prevent avoidable hospital admissions.

Methods
This retrospective study analyzed data from 530 patients (mean age 85.5 ± 5.2 years) enrolled in the IRCCS INRCA HEN service between 2021 and 2024. Patient monitoring was performed by a multidisciplinary team using electronic tools and monthly home visits. Data on demographics, comorbidities, nutritional parameters, hospitalizations, and mortality were collected and analyzed using correlation and regression models.

Results
Of the 530 patients, 36.98% experienced at least one hospitalization (n=314 total), but only 10.83% were directly related to HEN, mainly due to PEG placement. The most frequent causes of hospitalization were infections (52.21%), particularly urinary tract infections (18.36%), pneumonia (9.96%), and aspiration pneumonia (7.96%). The overall in-hospital mortality rate was 16.24%. Longer HEN duration was moderately associated with increased hospitalization risk ($\rho = +0.32$, $p < 0.001$), while higher age was negatively associated ($\rho = -0.20$, $p = 0.012$). Gender, BMI, and living situation had no significant association with hospitalization risk. Outpatient nutritional visits were not protective and were associated with a higher likelihood of hospitalization.

Discussion
The findings support the safety and effectiveness of structured HEN programs in minimizing hospitalizations directly linked to enteral nutrition. However, preventable admissions due to infections and respiratory complications remain a significant issue. The data suggest that improved coordination with primary care, enhanced infection prevention strategies, and timely home-based interventions could reduce hospitalizations. Despite the high vulnerability of this population, outcomes were equitable across settings, highlighting the value of multidisciplinary, integrated home care.

Conclusions

HEN can be safely administered to frail elderly patients when supported by a multidisciplinary model, as demonstrated by the INRCA experience. Reducing preventable hospitalizations requires a more integrated approach, focusing on proactive care, intersectoral collaboration, and enhanced home-based diagnostics.

Improving nutritional care in residential elderly facilities: The impact of healthcare workers' education on attitudes toward malnutrition management

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Citation
Zanini, M., Catania, G., Di Nitto, M., Delbene, L., Ripamonti, S., Musio, M.E. Improving nutritional care in residential elderly facilities: The impact of healthcare workers' education on attitudes toward malnutrition management.

Background

Malnutrition in older adults is a critical challenge in nursing homes, with prevalence reaching up to 18.2%. Despite the availability of effective nutritional interventions, outcomes remain suboptimal due to healthcare workers' (HCWs) limited awareness and inconsistent attitudes. Positive attitudes are crucial for early detection, individualization, and implementation of nutritional strategies, especially in frail elderly populations.

Aim
This study assessed the attitudes of HCWs toward nutritional care for older adults in Italian residential facilities and analyzed how previous education on malnutrition influenced these attitudes.

Methods
A cross-sectional study was conducted across 41 nursing homes in Northern Italy, involving 1,789 HCWs (nurses, assistants, physicians). The validated Italian version of the Staff Attitudes to Nutritional Nursing Geriatric care scale (SANN-G) measured attitudes across five domains: nutritional norms, habits, assessment, intervention, and individualization. Multivariate logistic regression explored associations with demographic and educational variables.

Results
Only 23.48% of HCWs demonstrated globally positive attitudes toward nutrition. However, those who had completed a training course on malnutrition were significantly more likely to report positive attitudes (OR 1.54, 95% CI: 1.16–2.03; $p < .002$), especially in domains of assessment, intervention, and personalization. Nurses and younger staff outperformed physicians and older colleagues in all dimensions. Individualization scored highest (54.95%), while nutritional norms scored lowest (13.36%).

Conclusion
Malnutrition education significantly enhances HCWs' attitudes toward nutritional care in residential geriatric settings. These findings emphasize the urgent need to integrate structured, role-specific nutritional training into continuous professional development, enabling more proactive and individualized care. Targeted educational programs may improve early identification of malnutrition, reduce adverse outcomes, and promote longevity with quality in frail older populations.

Keywords: Malnutrition, Older Adults, Nursing Homes, Nutrition Education, Frailty, Healthcare Workers, SANN-G, Personalized Care

Future perspectives of femoral venous access: A pilot study

Author
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Citation
Celestini, P. Future perspectives of femoral venous access: A pilot study.

Background
Over the last decade, the insertion of femorally inserted central catheters (FICCs) has become increasingly common in clinical practice. Thanks to new evidence, guidelines for safe implantation, ultrasound-guided insertion techniques, and strategies for complication prevention have been redefined. Historically, femoral venous access was limited to emergencies due to risks such as infection, thrombosis, and dislocation. Recent studies, however, suggest that mid-thigh insertion of the superficial femoral vein appears comparable in safety to the mid-arm site used for peripherally inserted central catheter (PICC) placement.

Objective
To evaluate the safety and effectiveness of elective FICC placement using ultrasound-guided venipuncture and intra-procedural tip location, and to assess early and late complications.

Materials and Methods
This prospective observational pilot study was conducted by the Vascular Access Team at Belcolle Hospital, Viterbo. Thirty consecutive adult patients

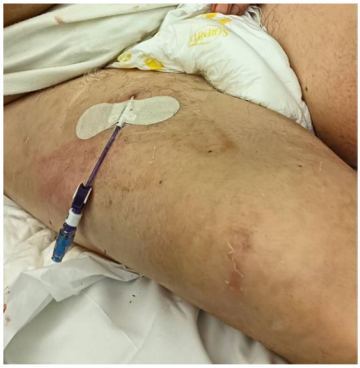

FIGURE 1
Agitated patient prone to accidental removal of the device.

FIGURE 2
Patient with absolute contraindications to PICC or CICC placement.

requiring central venous access between April 1 and July 31, 2024 were enrolled. Ultrasound-guided puncture of the superficial femoral vein was performed following the SIF protocol. Tip location was assessed intra-procedurally via a transhepatic ultrasound window. Follow-up at 7 days included screening for infectious and thrombotic complications.

Results

Thirty patients (14 women, mean age 80 years; 16 men, mean age 79 years) were included (Fig. 1). Indications for FICC included dementia 22/30 (73%), agitation 12/30 (40%), mechanical ventilation 5/30 (16%), forced postures 6/30 (20%), dialysis 3/30 (10%), and contraindications to centrally inserted central catheter (CICC) or PICC placement 6/30 (20%) (Fig. 2). Implantation success was 30/30 (100%). Complications included one accidental dislocation and three catheter malfunctions due to looping; no catheter-related infections or thromboses were observed at 7-day follow-up.

Conclusions

Elective FICC placement appeared safe and effective, consistent with recent literature. Mid-thigh exit sites showed safety comparable to mid-arm sites in terms of infection and thrombosis risk. The transhepatic ultrasound window provided accurate, safe, and cost-effective intra-procedural tip location. Thus, FICCs can be considered as reliable as PICCs and CICCs, expanding indications beyond emergencies to include patients with recurrent accidental catheter removals or contraindications to upper-body access.

Incidence and severity of sarcopenia in patients with transfusion-dependent thalassemia (TDT)

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Citation
Caroli, P.L. Incidence and severity of sarcopenia in patients with transfusion-dependent thalassemia (TDT).

Background

Thalassemias are inherited hematological disorders characterized by defective globin chain synthesis, leading to microcytic, hypochromic red blood cells, chronic hemolysis, and persistent anemia. β-thalassemia is the most widespread form worldwide, with an estimated carrier prevalence of 1.5% of the global population. In its most severe presentation, transfusion-dependent thalassemia (TDT), patients require lifelong regular transfusions and iron chelation therapy to ensure survival. Despite therapeutic advances that have improved life expectancy, individuals with TDT often display altered body composition, including reduced lean mass and bone mineral density, along with an increased risk of malnutrition. This condition appears to be multifactorial: reduced physical activity due to chronic anemia and iron overload–related cardiac complications; insufficient dietary intake linked to appetite loss, fatigue, or gastrointestinal disturbances; hypermetabolism driven by ineffective erythropoiesis; endocrine dysfunctions such as insulin

resistance and IGF-1 deficiency; and catabolic processes associated with oxidative stress and iron-induced organ damage. The convergence of these mechanisms suggests a particular vulnerability to sarcopenia, a progressive clinical syndrome defined by generalized loss of muscle mass and strength, which is associated with adverse outcomes such as frailty, disability, and increased mortality. However, evidence regarding the nutritional status and sarcopenia risk in adult patients with TDT remains limited, and the underlying pathogenic mechanisms are not yet fully understood.

Objective

The main objectives of the study are to establish the prevalence of frailty and the risk of sarcopenia in patients with transfusion-dependent thalassemia (TDT) of pre-geriatric and geriatric age attending hemoglobinopathy centers and to assess the actual presence of sarcopenia in patients for whom data on muscle mass estimated with Dual Energy X-ray Absorptiometry (DEXA) using a specific algorithm and/or Body Impedance Analysis (BIA) were available.

Methods

The single-center observational study included 11 patients Followed by the Center for the Diagnosis and Treatment of Thalassemia at the Vito Fazzi Hospital in Lecce. The phenotypic characteristics of the patients are described in Table 1. Body composition was assessed using the use of a portable bioimpedance device (BIA-ACC®, Biotekna). This device applies alternating currents using two different frequencies, 50 and 1.5 kHz (measuring method bi-frequency), to measure body composition, based on a multicompartmental model. (Library 12 -16. Horm). The BIA-ACC® device provides information on total body water, extracellular and intracellular water, fat mass (FM) and lean mass (FFM) measured both in kilograms (kg) than as a percentage of body weight (BW %), bone mass (BM) in kg, mass skeletal muscle (SM) in kg and as a percentage of lean mass (FFM %). Total skeletal muscle (TSM), appendicular skeletal muscle (ASM), and fat were measured using bioelectrical impedance analysis. The weight-adjusted skeletal muscle index (wSMI) was calculated by dividing the total ASM, which is the sum of skeletal muscle in the bilateral upper and lower four limbs (Kg),

TABLE 1: Phenotypic characteristics of the patients

PAZIENTE con TDT	SESSO	ETA'	PESO (KG)	ALTEZZA (cm)	FFM % (min 75%)	FM % (min 7%- max 25% bw)	S-SCORE	Skeletal muscle (kg) min 35%, norm >40%	wSMI (%) min 34%	hSMI (Kg/m^2) min 7,2kg/m^2
1	M	43	61,5	160	63	37	-2,4	12,5	20	4,9
2	M	59	74,5	180	70	30	-1,6	18,1	24	5,6
3	M	32	55,5	164	81	19	-1,1	16,4	30	6,1
4	M	32	71,5	177	74	26	-0,9	19,7	28	6,3
5	M	37	74	184	73	27	-1,5	19,3	26	5,7
6	M	45	67	174	80	20	1,2	19,6	29	6,5
7	M	55	73	174	65	35	-1,9	16,3	22	5,4
8	F	46	63	165	69	31	-1,4	11,9	19	4,4
9	F	40	59,5	159	68	32	-1,3	11,1	19	4,4
10	F	51	89,5	163	56	44	1,1	17,1	19	6,4
11	F	45	67	164	64	36	-1,3	11,9	18	4,4

by body weight (Kg) in percent (total ASM/body weight x100%). The cutoff value for sarcopenia was defined for the wSMI as < 29.1% for men and < 23.0% for women. The height-adjusted skeletal muscle Index (hSMI) was calculated bu using this formula: hSMI = ASM / height^2. It uses appendicular skeletal muscle mass (ASM) and it is the most commonly used index in international consensus guidelines (e.g., EWGSOP). The cutoff value for sarcopenia was defined for the hSMI as < 7.0 kg/m^2 for men and < 5.4 kg/m^2 for women.

Results

In this observational study, conducted on a cohort of 11 adult patients with Transfusion-Dependent Thalassemia (TDT), with a mean age of 44.1 years (44.1 $\pm$ 8.7 years), including 7 males and 4 females, a sarcopenia prevalence of 90.9% was observed according to the wSMI, hSMI, and S-score criteria

defined in the study. Sex-specific analysis confirms a high prevalence of sarcopenia in the adult TDT population (age >30 years). Specifically: 100% of male patients were sarcopenic (hSMI 5.8 $\pm$ 0.5 kg/m^2; Wsmi 25.6 $\pm$ 3.7%; S-score -1.2 $\pm$ 1.2); 75% of female patients were sarcopenic (hSMI 4.9 $\pm$ 1.0 kg/m^2; wSMI 18.8 $\pm$ 0.5%; S-score -0.7 $\pm$ 1.2).

Conclusions
Although based on a small sample size, this study highlights a high prevalence of sarcopenia among adult TDT patients over the age of 30. Despite the relatively young age compared to the geriatric population, where sarcopenia is more commonly studied, nearly all patients analyzed showed significantly reduced muscle mass values, along with altered hSMI, wSMI, and S-score measurements. The data suggest that TDT patients in adult and pre-geriatric age are highly vulnerable to muscle mass loss, likely due to a combination of factors, including: secondary hypogonadism and endocrine disorders, chronic inflammation and iron overload, physical inactivity, metabolic alterations related to the underlying disease.

Keywords: sarcopenia, thalassemia, muscle mass, transfusion

Home Enteral Nutrition (HEN): The critical role of hospital training for effective HEN management

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Citation
Gatti, S., De Marco, P., Frige, F. C., Mulazzani, G.E.G., Rossi, A., Siino, E., Valtorta, M., Zanoni, M.C., Lanzi, P. Home Enteral Nutrition (HEN): The critical role of hospital training for effective HEN management.

Background

Artificial Nutrition is a vital therapy to prevent malnutrition, for patients who cannot meet their nutritional needs with regular food intake. Thus Home Artificial Nutrition (HAN), either Enteral (HEN) or Parental (HPN), improves patient's health, quality of life, reduces re-hospitalization and healthcare costs (1,2). Italian regulations governing HAN vary widely between regions, leading to inconsistent standards of care (2,3). In Lombardy, recent regional initiatives, such as the establishment of the Clinical Nutrition Network, have promoted an integrated, cost-effective approach to manage HAN and detect nutritional risk for in/outpatients (4,5,6). As regards HEN, its effectiveness strongly depends on caregiver CG/patient training to acquire skills to safely manage therapy and prevent complications. Education with a dedicated nutritional team, prior to hospital discharge, is crucial, although this is not always possible in all hospital settings (1,2,3).

Objective

To assess the quality of CG/patient HEN training in San Paolo Hospital before patient discharge, by evaluating: 1. Training execution (where/by whom), 2. HEN management (CG or patient) 3. knowledge acquired with training at discharge and critical issues, 4. treatment-related complications 5. CG/patients' suggestions to improve training. The final goal was to develop a guide to improve HEN management.

Subjects/Methods

In this retrospective observational study a 34-item questionnaire was submitted to CG or patients (pts) discharged from hospital with HEN between 2022 and 2024. Study cohort: 52 subjects (34 males /18 females, mean age of 74 $\pm$ 15 years); 22 were deceased at the time of data collection, but were included in the study. Exclusion criteria: Patients residing in long-term care facilities (nursing/retirement homes) Indications for HEN: dysphagia (46%, n=24 pts), oncological (42%, n=22pts) and neurological diseases (10%, n=5pts), stroke (2%, n=1pt). Enteral access: 88.5% (n=46 pts) percutaneous endoscopic gastrostomy (PEG); 11.5% (n=6 pts) nasogastric tube (NGT) The questionnaire evaluated the type of training received (4 questions), HEN management (3 questions), acquired knowledge/skills with/without training (11 questions), HEN-related complications (6 questions), difficulties/critical issues (4 questions) and patients' suggestions to improve CG/patient training (6 questions). Answers for acquired knowledge/skills were designed as a rating scale with scores ranging from 1 to 5 (1= "not at all"-> 5= "completely"). All the other items were designed as "yes or no" answers. A manual for HEN management was then developed based on the questionnaire results.

Results

1) Training execution:

- 85% (44 pts) of the cohort received a complete training while 15% (8pts) stated they had not

- 73% of the trained cohort (32 pts) received training before hospital discharge, 27% (12 pts) at home upon product delivery

- 64% of the trained cohort (28 pts) were trained by a ward nurse, 32% (14 pts) by the home care service (ADI), and 4% (2 pts) by the supplying company

2) HEN management: In 56% of the whole cohort (29pts), HEN management was provided by a family member, in 21% (11 pts) by an external caregiver, in 17% (9pts) by the patient himself, in 6% (3pts) by a healthcare assistant.

3) Level of knowledge/skills acquired by CG/patient at discharge and critical issues: see Table 1 (as attachement).

4) HEN-related complications: see Table 2 (as attachement). No significant difference was observed between the 2 groups (Trained vs not trained) . 42% (n=22) of the patients went to hospital for complications' treatment.

Table 1: Level of knowledge in managing HEN in the two groups (trained vs not-trained), expressed as a mean of the rating scale scores

Level of knowledge	Trained (44 pts) (mean, SD)	Not-trained (8 pts) (mean, SD)	P value
Correct performance of manoeuvres	3.7 ± 1.0	2.4 ±1.0	***
Storage conditions of enteral formula	3.6 ± 1.1	2.4 ±1.0	**
General hygiene standards	3.6 ± 1.0	2.4 ±1.0	**
Operation of the pump	3.7 ±1.0	2.6 ±0.9	*
Quantity and time of infusion	3.7 ± 1.1	2.9 ±0.9	*
Correct position of the patient	3.7 ± 0.9	2.9 ±0.9	*
Flushing of the pump	3.7 ± 1.1	2.8 ±0.7	*
Management and dressing of access route	3.3 ±1.4	2.8 ±0.7	ns
Drug administration	3.3 ±1.2	2.7 ±0.7	ns
Occurrence of complications	2.5 ±1.4	1.9 ±1.1	ns
Management of complications	2.3 ±1.3	1.9 ±1.1	ns

Statistics: Student's t- test for paired data :*p<0,05,**p<0,01,***p<0,001

Table 2: Treatment-related complications in the two groups

Treatment-related complications	Whole group % (n)	Trained % (n)	Not trained % (n)
Constipation	44% (23)	45% (20)	38% (3)
Nausea and reflux	35% (18)	34% (15)	38% (3)
Diarrhea	31% (16)	27% (12)	50% (4)
Skin irritation at the tube exit site	35% (18)	34% (15)	38% (3)
Tube dislodgement	25% (13)	25% (11)	25% (2)
Blockage or kinking of the tubing	25% (13)	23% (10)	38% (3)
Persistent cough	19% (10)	16% (7)	38% (3)
Vomiting	12% (6)	7% (3)	38% (3)
Purulent discharge or granulation tissue	4% (2)	0% (0)	25% (2)

Statistics: Chi-square- test.:*p<0,05,**p<0,01,***p<0,001

5) Potential strategies to improve CG/patient training: 83% (n=43 pts) of respondents asked for more training. The areas with highest demands were: prevention/management of complications (95%, n=41 pts), tube management/maintenance (67%, n=29 pts), peristomal site care in PEG patients (63%, n=27 pts), and functioning of the feeding pump (58%, n=25 pts). The preferred training methods were: 93% (n=40 pts) written instructions, 58% (n=25) one-to-one sessions, 23% (n=10) group sessions, and 21% (n=9) instructional videos. Based on these needs, we implemented and updated a manual for HEN management.

Conclusions

1) Most of the patients received an initial training, however supplied by non specialized personnel, and not always at hospital discharge.

2) The level of knowledge acquired is higher for the trained group (as expected) but no significant difference was observed in the number of complications between the 2 groups. This may depend on the numerical difference between the 2 groups (44vs8 pts). However the % of complications was higher in the not-trained group. Moreover, complications' management required hospital access in nearly half of the patients.

3) Current literature strongly supports the importance of structured HEN management training, delivered by dietetic personnel with continuous follow-up/monitoring by specialized staff to prevent, control and manage complications at home. Therefore a multidisciplinary approach where the dietitian plays a role in dealing with clinical issues and complications improves long-terms outcomes/ patients' quality of life, reduces hospitalizations/healthcare costs.

4) Based on the identified critical issues and complications, a specific manual has been developed.

5) As requested by Lombardy Regional initiatives regarding nutritional risk management, ASST Clinical Nutrition Unit will implement HEN training and monitoring to standardize HAN procedures.

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Management of chronic small intestinal dysmotility and visceral hypersensitivity in a patient with hypermobile Ehlers-Danlos syndrome (hEDS) receiving artificial nutrition: A case report

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Citation
Lunetti, S., Tedesco, S., Campelli, N., Ferrara, M., Taus, M. Management of chronic small intestinal dysmotility and visceral hypersensitivity in a patient with hypermobile Ehlers-Danlos syndrome (hEDS) receiving artificial nutrition: A case report.

Background

A growing body of research is highlighting the association between hypermobile Ehlers-Danlos syndrome (hEDS) and gastrointestinal (GI) disorders, particularly in cases where it co-occurs with postural orthostatic tachycardia syndrome (POTS) and mast cell activation syndrome (MCAS). Diagnosing these conditions remains challenging. GI symptoms include chronic small intestinal dysmotility and visceral hypersensitivity, which can lead to intestinal insufficiency.

Methods
In this case study, we present the experience of a young woman with hEDS, POTS and MCAS, whose quality of life improved significantly after she began receiving artificial nutrition. This case is of particular interest as, after an initial phase of parenteral nutrition, she transitioned to enteral tube feeding, initially via a nasogastric tube and subsequently via a nasojejunal tube due to persistent gastric pain during feeding.

Results
Switching to enteral nutrition was crucial in resolving complications associated with central venous access and restoring intestinal function, thereby improving quality of life.

Conclusions
This paper examines the challenges presented by this case in detail, providing notes on the necessary pathophysiology to understand gastrointestinal complications related to hEDS and evaluating effective and sustainable medical and nutritional strategies.

Incidence of sarcopenia in patients undergoing sleeve gastrectomy after 6 months of close postoperative dietary monitoring in the clinical nutrition service

Author
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Citation
Scardia, S. Incidence of sarcopenia in patients undergoing sleeve gastrectomy after 6 months of close postoperative dietary monitoring in the clinical nutrition service.

Objective

Sarcopenia is a progressive musculoskeletal disease, characterized by low muscle strength, low muscle quantity, and low physical performance. Sarcopenia is associated with cardio-metabolic disorders. The close link between sarcopenia and cardio-metabolic disorders including type 2 diabetes and cardiovascular disease has been explained by the multifactorial etiology of sarcopenia, including chronic inflammation, insulin resistance, and endocrine abnormalities. Following bariatric surgery, dietary protein intake is significantly reduced. The main cause is poor tolerance to most protein-containing foods (meat, fish, eggs and legumes), particularly in the first 6 months. The objective of the study is to evaluate the presence

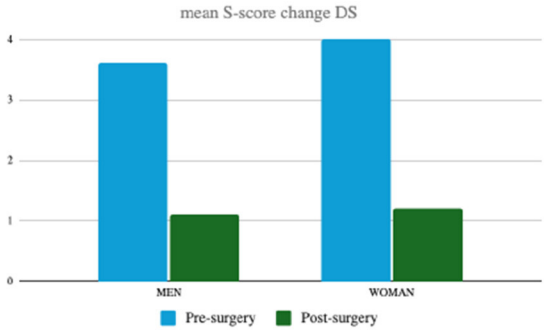
of sarcopenia in patients undergoing sleeve gastrectomy after close postoperative dietary monitoring in the clinical nutrition service.

Methods

The single-center observational study included 50 patients undergoing sleeve gastrectomy. Body composition was assessed using the use of a portable bioimpedance device (BIA-ACC®, Biotekna). This device applies alternating currents using two different frequencies, 50 and 1.5 kHz (measuring method bi-frequency), to measure body composition, based on a multicompartmental model (Library 12 -16. Horm). The weight-adjusted skeletal muscle index (wSMI), was calculated by dividing the total ASM, which is the sum of skeletal muscle in the bilateral upper and lower four limbs (Kg), by body weight (Kg) in percent (total ASM/body weight x100%). The cutoff value for sarcopenia was defined for the wSMI as < 29.1% for men and < 23.0% for women, for the S-score if Is less than -1.5 SD. The percentage of excess weight lost (%EWL) is calculated as the difference between the starting weight and the ideal weight obtained with the Lorenz formula. Dietary consultations are scheduled the day after surgery, after 7 days, and after 1, 3, and 6 months. During the first month, the diet is increased to a solid 1200-kcal diet with the following nutritional composition (50% carbohydrates, 30% protein, and 20% fat). All patients are recommended a protein supplement of 30 grams of isolate whey protein 90% for three months and 20 grams for three months. Statistical analysis was carried out using regression analysis.

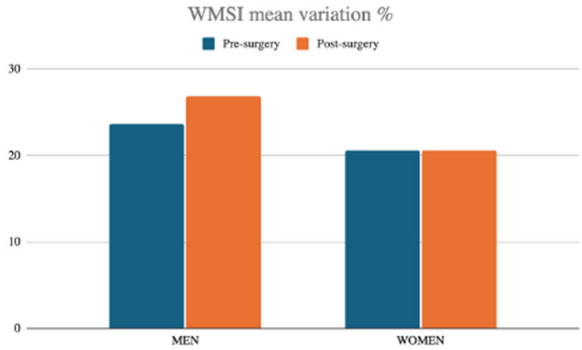
Results

Weight loss 6 months after sleeve gastrectomy was 25.9% in male patients (N=11) and 29.9% in female patients (N=39). The change in S-score was -67.7% in the male population (Table 1) and -70% in the female population. Regarding the wSMI, an increase of 13.4% was observed in the male population, while it remained substantially stable in the female population (+ 0.5%) (Table 2). The percentage of excess weight lost (%EWL) was 60% in men and 54% in women. No statistically significant correlations were found in the presence of cardio-metabolic comorbidities (type 2 diabetes mellitus, OSAS, hypertension, dyslipidemia). Median albumin values were normal (4.1 g/dl - n.v. 3.5-5 mg/dl), while median pre-albumin values were pathological



mean S-score change (table 1)	Pre-surgery	Post-surgery
MEN	3,6	1,1
WOMAN	4	1,2

FIGURE 1
Table 1. Mean S-score change.



WMSI mean variation % (table 2)	Pre-surgery	Post-surgery
MEN	23,64	26,82
WOMEN	20,5	20,6

FIGURE 2
Table 2. wSMI mean variation %.

(18 mg/dl - n.v. 23-42 mg/dl) at 3 months without a statistically significant difference between patients who showed a more marked loss of S-SCORE ($p = 0.24$).

Conclusions

Despite intensive follow-up by the multidisciplinary team (physician, dietitian, and psychologist) of the clinical nutrition service, a relentless reduction in lean body mass (S-SCORE) was observed, instead S Score values are not indicative of sarcopenia. At the same time, we observed an improvement in wSMI values in the male population, with a statistically significant difference compared to the female population ($p = 0.04$). In our opinion, this difference is due to men's better tolerance and compliance with the diet, as well as greater average physical activity, also in relation to their workload. Loss of lean mass should be monitored in the future to prevent the physical and metabolic consequences of sarcopenia, particularly considering the average age of patients (41 years) and the long-term repercussions. Albumin does not appear to be a valid marker for the evaluation of muscle mass, furthermore pre-albumin would seem to be more associated with the possible loss of muscle mass but studies with larger population samples are necessary. Further monitoring and protein and amino acid supplementation strategies should be explored. Furthermore, further studies are needed to investigate the long-term evolution of the S score and wSMI after sleeve gastrectomy.

Keywords: sarcopenia, obesity, sleeve gastrectomy, bariatric surgery, pre-albumin

Effectiveness of early home care of the dysphagic patients with neurodegenerative diseases for the prevention of hospitalizations

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Citation
de biase, v., spizzichino, p., fabiocchi, f., labanca, m., novi, b., piciocchi, c., vannella, l., giorgetti, g. Effectiveness of early home care of the dysphagic patients with neurodegenerative diseases for the prevention of hospitalizations.

Background and Aims

Presence of dysphagia is common among patients with NDDs (neurodegenerative diseases) and is associated with malnutrition and higher mortality rate. The management of dysphagia in the home environment can facilitate early intervention and minimize unfavorable outcomes necessitating emergency interventions. The aim of this study is to evaluate how early home care reduces hospital admissions in these patients.

Method

Numerical analysis of dysphagic patients under the care of home artificial nutrition service of ASLRoma2, versus number of hospitalizations of residents in ASLRoma2 area in the years 2019-2024, pre/post activation PDTAr Dysphagia. All statistical analysis was performed using SPSS software version 28.0; the reduction of hospital admissions was evaluated using Pearson's Chi square.

Results

From 2019 to 2024, the number of dysphagic patients assisted at home with thickeners and/or thickened water rose by 168%, from 75 (2019) to 201 (2024). Hospitalizations with diagnosis of dysphagia increased by 26.8%: 474 (2019) vs 614 (2024). However, hospitalizations with dysphagia as main diagnosis reduced by 43.3% (150 vs 85). Among hospitalizations for dysphagia, patients with NDDs accounted for 17% of all dysphagia hospitalizations in 2019 and 9% in 2024 (χ^2 $p<0.001$); for hospitalizations with dysphagia as the primary diagnosis, the proportion of NDDs patients decreased from 40% to 20% (χ^2 $p=0.002$).

Conclusions

Early home care of dysphagic patients with NDDs may lead to a reduction of hospitalizations for dysphagia and contribute to an improved quality of care. Further studies are needed to support this hypothesis.

Nutritional assessment in hematologic patients undergoing stem cell transplantation: A critical insight

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Citation
Zamponi, V., Ferrara, M., Lunetti, S., Taus, M. Nutritional assessment in hematologic patients undergoing stem cell transplantation: A critical insight.

RationalePatients undergoing Hematopoietic Stem Cell Allogeneic Transplantation (HSCT) are at high risk of developing malnutrition. Understanding changes in body composition, muscle strength, energy intake, and symptom burden is critical for optimizing post-transplant care and outcomes. Sex-specific differences in recovery patterns may inform personalized nutritional and rehabilitative strategies.

Methods and Materials
Nutritional status was assessed in 12 adult patients (7 men, 5 women) undergoing HSCT at the Ancona Dietetic and Clinical Nutrition Centre at baseline (T0), 21 days (T1), and 45 days (T2) post-transplant. Body weight, handgrip strength (HS), and body composition parameters including Fat Mass (FM), Body Cell Mass (BCM), and Extracellular Water (ECW) were

measured using Bioelectrical Impedance Analysis (BIA) and a Dynamometer, respectively. Nutrition-impact symptoms related to disease or treatment were reported subjectively by patients. Daily caloric intake was estimated using a 24-hour dietary recall. For each parameter, median Δ values were calculated for T1–T0 and T2–T1 intervals.

Results

From T0 to T1, both sexes experienced reductions in body weight, BMI, FM, and BCM, indicative of treatment-related catabolism. These reductions were more pronounced in males (median ΔWeightT1–T0: –7.3 kg vs –2.9 kg in females). ECW decreased in males (median ΔECWT1–T0: –1.3 L) but increased in females (median ΔECWT1–T0: +2.2 L), suggesting a sex-specific pattern of fluid retention. Between T1 and T2, males continued to show declines in all parameters, whereas females demonstrated partial recovery in weight, BCM, and FM, accompanied by stabilization of ECW. The slightly more favorable trend in females may be due to metabolic differences, greater adherence to dietary therapy, and better baseline clinical condition. HS changes reflected similar sex-specific recovery patterns. Both males and females showed comparable declines from T0 to T1 (median ΔHST1–T0: –5 kg in both). Between T1 and T2, males showed minimal further decline or stabilization (median ΔHST2–T1: 0 kg), while females improved moderately (median ΔHST2–T1: +2 kg). Daily caloric intake decreased markedly at T1, coinciding with peak symptom burden, then partially recovered by T2. Median changes were –811 kcal in males and –713 kcal in females from T0 to T1, and +523 kcal and +529 kcal, respectively, from T1 to T2. In female patients, some symptoms were already present at baseline (T0), particularly asthenia, xerostomia, and appetite loss, with some improvement by T2. In males, the peak of symptoms occurred at T1, with prominent appetite loss, dysgeusia, asthenia, and xerostomia. Although symptoms generally improved by T2, males exhibited a slower recovery, especially for fatigue, which persisted and even worsened.

Conclusions

HSCT significantly impairs nutritional status in hematological patients, with clear sex-specific differences in metabolic recovery, muscle strength, and

symptom burden. Systematic monitoring of body composition and muscle strength before and after HSCT is critical to guide early, personalized nutritional interventions and, when clinically feasible, tailored moderate-intensity physical activity to enhance recovery and long-term outcomes. However, given the small sample size, these findings should be interpreted with caution, and further studies with larger cohorts are warranted to confirm and expand these observations.

Conflict of Interest Disclosure Statement
Corresponding authors have no conflict of interest to declare.

Acknowledgement
The contents of the abstract have not been published prior to the date of submission.

The nurse case manager in home enteral nutrition: Bridging healthcare and family well-being

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Citation
Avanzolini, A. The nurse case manager in home enteral nutrition: Bridging healthcare and family well-being.

Introduction

With the rise of chronic diseases, population aging, and early hospital discharges, the number of patients requiring complex nutritional support, such as artificial nutrition at home, is steadily increasing. In a family environment that must adapt to new care needs, the role of the nurse case manager has evolved from being perceived as subordinate to becoming a crucial reference point within the Home Enteral Nutrition (HEN) service. The case manager not only ensures continuity of care and improved quality of life for the patient but also provides reassurance to informal caregivers and enables effective task shifting and sharing through caregiver training. The nursing role in HEN is no longer limited to the technical and operational management of artificial nutrition but now includes key responsibilities in administration and monitoring of devices. The nurse case manager has emerged as the professional responsible for the initial assessment of the patient and their context, the coordination of the multidisciplinary team, and the therapeutic education of caregivers. They are also primarily responsible

for the continuous monitoring of the patient's clinical and nutritional status and for adapting the care plan according to the patient's evolving condition.

Methodology

The home nursing service for HEN was launched in 2005 with the aim of providing home follow-up for patients under the care of the Clinical Nutrition Unit at INRCA Ancona. Main interventions included: health education on enteral nutrition, monitoring of feeding tubes (NGT, PEG), management and supply control at home, verification of adherence to therapy, and scheduled tube replacements. Initially activated through a supply contract with Vivisol, the service started with around twenty patients in the Marche region, reducing hospital admissions by providing multidisciplinary care directly at home. Over the years, the service has expanded in both effectiveness and patient numbers, extending also to geriatric residential facilities. Today, about 130 patients receive home-based assistance, with individualized interventions to their clinical and nutritional needs. At the same time, the case management function performed by nurses has consolidated as a central element in care coordination. The nurse case manager has established themselves as the key link among all stakeholders—patients, caregivers, the multidisciplinary healthcare team, and community services—coordinating activities, monitoring therapeutic adherence, and ensuring continuity, safety, and quality of care (Fig. 1).

Results

Home artificial nutrition is an essential therapeutic intervention for patients with complex nutritional needs, but it presents significant challenges, both in clinical management (complications, infections, imbalances) and in the use of tubes, stomas, and other devices. In this context, the nurse case manager plays a central role, combining technical expertise, organizational skills, and psychological support for patients and families, with the aim of reducing avoidable hospitalizations and promoting the best possible quality of life at home.

The main nursing activities in HEN include:

- planning visit schedules and managing service areas, in coordination with administrative staff and the multidisciplinary team, using company software;
- direct patient care (administration of artificial nutrition, monitoring of vital signs, weight, hydration, anthropometric evaluation, detection of signs of malnutrition or overnutrition);
- education and support for caregivers (training on nutritional management, device hygiene, prevention of complications);
- replacement and management of devices (tube changes, dressings, use of feeding pumps);
- Monitoring adherence to the nutritional plan and verification of correct intake;
- psychological and relational support for patients and families in coping with therapy;
- performance of home ECGs and transmission of reports to the cardiology department (INRCA);
- sharing and forwarding medical documentation with the outpatient team (nutritionist, dietitians, speech therapist, administrative staff). The nurse is therefore not merely an executor of medical prescriptions but a key professional who integrates patients, caregivers, and families into a holistic and personalized care pathway, acting as a mediator among healthcare professionals and ensuring continuity of care, safety, and emotional support.

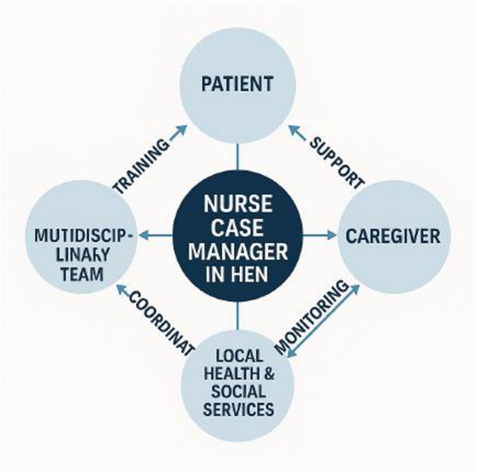

FIGURE 1
The coordinating role of the nurse case manager within the INRCA Ancona HEN service.

Discussion

The holistic nursing approach in HEN goes beyond clinical and nutritional care, addressing the patient's needs within their family environment and supporting them in adapting to a new life condition. Investing in the role of the nurse case manager, as implemented in the Clinical Nutrition Unit of INRCA Ancona, means ensuring comprehensive and safe nutritional pathways that integrate physical, psychological, and social aspects. This model improves the quality and safety of care, promotes adherence to therapy, and places the patient and caregiver at the center of the care process.

Keywords: Nurse case manager, home nursing care, nutritional therapy, hospitalizations, therapeutic adherence

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