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Adriana Crivelli[1], Fabricio Pochettino[1] María Fernanda Cascarón[1], Gabriela Capurro[1], Marcelo Puga[1], Óscar Soria[1], Agustín Flores[1], Lucas Morando[1], Andrés Luciano Nicolás Martinuzzi[2]

[1]Nutrihome S.A.; [2]Comité de Soporte Nutricional y Metabolismo (COSONUME). Sociedad Argentina de Terapia Intensiva. Buenos Aires, Argentina

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Correspondence: Andrés Luciano Nicolás Martinuzzi. Comité de Soporte Nutricional y Metabolismo (COSONUME). Sociedad Argentina de Terapia Intensiva. Cnel. Niceto Vega, 4617. C1414 BEA. Buenos Aires, Argentina
e-mail: andres.martinuzzi@nutrihome.com.ar

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ABSTRACT

Introduction: home enteral nutrition (HEN) is an essential medical procedure for patients unable to meet nutritional requirements through oral intake. Globally, HEN practices vary due to differences in healthcare systems and patient populations, but data from Latin America, particularly Argentina, are scarce. This study aimed to describe HEN practices and outcomes within a private healthcare service in Argentina.

Methods: a retrospective cross-sectional study was conducted, including all adult and pediatric patients receiving HEN in April 2023. Data on demographic, clinical, nutritional, and HEN characteristics were collected. Nutritional regimens, access methods, infusion modalities, and complications were analysed. Statistical analysis included descriptive and comparative tests, with $p < 0.05$ considered significant.

Results: among 1,816 patients (1,269 adults, 547 children), neurological conditions were the leading indication for HEN (adults: 77.9 %, paediatric: 67.8 %), followed by oncological conditions (adults: 11.7 %, paediatric: 1.3 %). Gastrostomy was the predominant access method, and non-continuous infusion was most common (cyclic in adults, intermittent in paediatric). Complication rates related to nutrition access were low (adults: 2.3 %, paediatric: 2.9 %), with tube dislodgement and ostomy leakage as the most frequent issues. Nutritional formulas were prescribed based on caloric and protein needs, with no significant differences in complication rates between formula types.

Conclusion: this first Latin American study on HEN highlights the predominance of neurological conditions, the preference for gastrostomy access, and non-continuous feeding. The low complication rates suggest the safety of HEN, underscoring the need for standardized data collection and regulation to optimize care and outcomes in Argentina.

Keywords: Home enteral nutrition. Argentina. Neurological conditions. Nutritional support. Complications. Healthcare practices.

RESUMEN

Introducción: la nutrición enteral domiciliaria (NED) es un procedimiento médico esencial para pacientes que no pueden satisfacer sus requerimientos nutricionales a través de la ingesta oral. A nivel

mundial, las prácticas de NED varían debido a diferencias en los sistemas de salud y en las poblaciones de pacientes, pero los datos de América Latina, particularmente de Argentina, son escasos. Este estudio tuvo como objetivo describir las prácticas y resultados de la NED dentro de un servicio de salud privado en Argentina.

Métodos: se realizó un estudio retrospectivo de corte transversal que incluyó a todos los pacientes adultos y pediátricos que recibieron NED en abril de 2023. Se recopilaron datos demográficos, clínicos, nutricionales y características relacionadas con la NED. Se analizaron los regímenes nutricionales, métodos de acceso, modalidades de infusión y complicaciones. El análisis estadístico incluyó pruebas descriptivas y comparativas, considerando significativo un valor de $p < 0,05$.

Resultados: se incluyeron 1816 pacientes (1269 adultos, 547 pediátricos), las afecciones neurológicas fueron la principal indicación para NED (adultos: 77,9 %, pediátricos: 67,8 %), seguidas de las afecciones oncológicas (adultos: 11,7 %, pediátricos: 1,3 %). La gastrostomía fue el acceso nutricional predominante, y la infusión no continua fue la más común (cíclica en adultos, intermitente en pediatría). Las tasas de complicaciones asociadas a los accesos nutricionales fueron bajas (adultos: 2,3 %, pediátricos: 2,9 %), siendo el desplazamiento del tubo y la fuga de ostomía los problemas más frecuentes. Las fórmulas nutricionales se adaptaron según las necesidades calóricas y proteicas, sin diferencias significativas en las tasas de complicaciones entre tipos de fórmulas.

Conclusión: este primer estudio latinoamericano sobre NED resalta la predominancia de afecciones neurológicas, la preferencia por el acceso por gastrostomía y la alimentación no continua. Las bajas tasas de complicaciones sugieren la seguridad de la NED, destacando la necesidad de una recolección de datos estandarizada y regulación para optimizar el cuidado y los resultados en Argentina.

Palabras clave: Nutrición enteral domiciliaria. Argentina. Afecciones neurológicas. Soporte nutricional. Complicaciones. Prácticas de atención médica.

INTRODUCTION

Enteral nutrition (EN) is a safe and effective type of nutrition support for those patients who do not meet their requirements through oral alimentation (1). Its efficacy is well documented in the hospital setting and at the patients' homes (2). Hence home enteral nutrition (HEN) is a medical procedure indicated to patients requiring nutritional support and unable to achieve nutritional goals with a standard oral, home-made diet when the continuation of hospital stay is no longer necessary and could continue this procedure at their home (3).

The use of HEN has increased enormously in the last few decades, triggering the development of specific legislation (4), national registries in many countries, and the publication of several guidelines and different surveys to address how many patients are in HEN and their characteristics (1,5). We could quote NADYA registration to HEN in Spain, established in 1992. Also, Europe has several studies concerning this population of patients from UK, Italy, France and one large European survey from ESPEN-HAN-group (6). One of the latest European epidemiological data from 2016 shows several differences in European HEN practice (7). Primarily due to different organizational structures in healthcare systems with different reimbursement programs and diverse populations of patients (3). Heterogeneity of the HEN populations are not only related to diagnosis, and nutrition method but could also be regarding type of diets and prognosis (1,4,5).

There is lack of evidence regarding for HEN in Latin America. The only publication addressing similar information is the "Ibero-American survey

of nutritional therapy in home care services" (8), in which it is described information gathered from 18 countries in Latin America, mostly from Brazil, but they do not present the number of patients assisted or numbers related to the real HEN practice. The only results are regarding the professional's answers about their practice.

It is important to obtain information regarding HEN in Argentina and to compare our results with other available publications. Our study is aimed to provide data concerning HEN from our institutions from Argentina.

MATERIAL AND METHODS

We conducted a retrospective cross-sectional study of HEN patients from private homecare companies providing services in Argentina. All patients of both genders receiving HEN on April 30, 2023 were included.

Primary endpoints

To describe the type of nutritional support provided to patients in the home enteral nutrition program, including the characteristics of the regimens used and their adequacy for individual nutritional needs.

Secondary endpoints

To Compare the types of enteral access used (e.g., nasogastric tube, gastrostomy, jejunostomy) based on the clinical characteristics of the patients. To assess the use of different types of enteral formulas according to the patient population and requirements. To determine the prevalence of complications related to HEN.

Inclusion criteria

- Adult and paediatric patients of any gender currently receiving Home Enteral Nutrition (HEN).

- Availability of comprehensive clinical records to gather the necessary information for analysis.

Exclusion criteria

- Patients whose HEN was prematurely discontinued due to complications unrelated to the prescribed nutritional support.
- Pregnant patients.

Recruitment of homecare companies

The project leaders invited homecare companies from the private healthcare sector known to have patients receiving HEN. The study protocol and database were submitted for evaluation by the Ethics Committee. A total of five teams from the private healthcare sector, representing five different regions of Argentina, participated in the study. Each participating team maintained its own database, recording anonymized patient data.

Homecare companies' HEN services and regulations

Homecare companies providing specialized nutritional support in Argentinian healthcare sector are regulated by Resolution MINSAL 1548/2007, a framework jointly established by the National Ministry of Health and the Argentine Society of Enteral and Parenteral Nutrition. This regulation mandates that home enteral nutrition (HEN) must be delivered by interdisciplinary teams, including physicians, nurses, and dietitians.

These companies are required to have a dedicated homecare structure, with the necessary health and commercial authorizations, and must comply with international guidelines regarding the use of medical supplies and disposables. Regular home visits are conducted to ensure ongoing clinical monitoring. Traditionally, patient medical records have been maintained in duplicate—one copy at the patient's home and

another at the homecare company’s headquarters. However, there is an ongoing transition towards a single, widely accessible digital medical record, enhancing efficiency and continuity of care.

Patients

Patients who met the inclusion criteria were included. Their information from the HEN service delivered during April 2023, was obtained from their clinical histories within the homecare company. Once the registration period was closed, the anonymized patient database was sent to the project leaders, who acted as principal investigators and compiled the data into an encrypted SharePoint database until the information was transferred to the analysis format.

Data collected

Each principal investigator from the participating teams recorded various data points. General information included the patient's gender, age in years, and classification as either pediatric (< 18 years) or adult (≥ 18 years). Anthropometric data comprised current weight at the time of admission, usual weight before the onset of illness, height, and body mass index (BMI). Additionally, the Subjective Global Assessment (SGA) score was documented.

Regarding nutritional support, investigators recorded the primary disease, the indication for home enteral nutrition (HEN), diet type, energy and protein intake, and the duration of nutritional support. Diets were categorized based on their energy and protein content: high-energy diets contained ≥ 1.3 kcal/mL, while high-protein diets contain more than 20 % of total energy from protein. Based on these definitions, four groups were created: normocaloric and normoproteic formula; normocaloric and high-protein formula; high-energy and high-protein formula; and high-energy and normoproteic formula (9).

Nutritional support access methods included gastrostomy (whether percutaneous or surgical), jejunostomy, nasogastric tube, and nasojejunal tube. Infusion methods were classified into continuous and non-continuous feeding. Continuous feeding involved administering enteral nutrition (EN) with or without a feeding pump over a 24-hour period. Non-continuous feeding included cyclic feeding, which delivered EN over a period of less than 24 hours, typically between 10 and 16 hours; intermittent feeding, which provided EN over a span of 20 to 60 minutes every 4 to 6 hours; and bolus feeding, where EN was administered over a short period at specific intervals, either by gravity or using a syringe.

Statistical analysis

Continuous variables were summarized by median and interquartile range (IQR, Q1-Q3) and some as mean and standard deviation (SD). For continuous variables with a non-normal distribution, the Mann-Whitney U-test was used for independent samples. Categorical variables are reported as frequencies and percentages and were tested with the Chi-square test for independent samples. A two-sided p-value < 0.05 was considered significant. Statistical analysis was performed using IBM SPSS, version 24.

Ethical aspects

The conduct of this study adhered to ethical principles and regulatory standards for research in human health, both nationally and internationally. These standards include Resolution 1480/2011 of the Ministry of Health of Nation, Law 3301/09 of CABA, and the Declaration of Helsinki of the World Medical Association, along with its amendments. Good Clinical Practice (GCP) standards, as outlined in ICH E6, were also followed. Data management respected patient confidentiality provisions outlined in National Law 25.326.

The research team leaders have received training in Good Clinical Practices from NIDA (Clinical Trials Network, National Institutes of Health, Department of Health, and Human Services) and were responsible for ensuring adherence to research GCP and the guiding principles of the Declaration of Helsinki.

As stated in Chapter 10 of the International Ethical Guidelines for Health-Related Research with Human Beings CIOMS/2016, this research posed no risks for the participants, as it was an observational retrospective study aimed solely at characterizing the home enteral nutrition provided. The established treatment was not modified. A waiver of informed consent was granted by the participating ethical committee.

RESULTS

A total of 2646 patients with HEN met the inclusion criteria. Of these, 1816 (68.6 %) were finally included in the study (1269 adult patients and 547 paediatric patients). However, 829 (31.4 %) patients were excluded due to lack of data in their records (Fig. 1).

The baseline characteristics of these HEN patients are presented in TABLE 1. Among the adult patients, the median age was 69 years (range 42-82 years) and 46.2 % were men. In the paediatric population, the median age was 8 years (range 4-12 years) and 55.2 % were boys. In both groups of patients, the most common indication for HEN was neurological pathology, accounting for 77.9 % of cases in adults and 67.8 % in children. Oncological diseases were more prevalent in the adult group (11.7%) compared to paediatric patients (1.3 %) (Table I).

The median time in HEN of those patients was 473 days for adults and 1168 days for paediatric patients. Table II presents the duration of HEN in relation to pathology and patient type.

Table III presents information related to the nutrition access. The most frequent nutrition support (NS) access used was gastrostomy, followed by nasogastric tube in both adult and paediatric patient groups. The

predominant modality of infusion was non-continuous in both adults and in paediatric patients. Among adults, the most common mode within this category was cyclic, whereas in paediatric patients, it was intermittent. An infusion pump was used in 98.1 % of adult patients and 95.4 % of paediatric patients (Table III).

The incidence of reported complications related to EN access during the period of study was low: 2.3 % in adults and 2.9 % in paediatric patients. The most frequent complication in adults was accidental tube removal, while in paediatric patients, it was ostomy leakage (Table III).

When analysing the cases divided into long-term or short-term EN access, short-term access was more frequently observed in females and in patients with active oncology disease. Among patients with more than 8 weeks on HEN, 78 % had long-term EN access. There was no difference in EN complications between long-term and short-term EN access. However, regarding EN access complications, those with short-term EN access more frequently presented with complications (4 % vs 1.9 %, $p < 0.001$).

Regarding EN formulas, 48.2 % of patients received a normocaloric and normoproteic formula, 18.9 % received a normocaloric and high-protein formula, 26.4 % received a high-energy and high-protein formula, and 6.5 % received a high-energy and normoproteic formula. Table IV presents the types of formulas used for different pathologies (Table IV).

No significant differences in EN-related complications based on the type of formula were observed during the study period. Table V displays the Chi^2 test results assessing the relationship between EN formulas and enteral complications.

The median caloric intake in adult patients was 1500 kcal/day (IQR 1330-2000), equivalent to 27.8 kcal/kg per day (range 22.7-34). In paediatric patients, it was on average 1200 kcal/day (range 910-1500), equivalent to 57.9 kcal/kg per day (range 38.5-84.4) (Table I). The median protein intake was 66 g/day (1.15 g/kg per day) in adults and

28.8 g/day (1.50 g/kg per day) in paediatric patients. The median volume of EN received was 1500 ml/day (range 1000-1500) in adults and 1100 ml/day (range 1000-1450) in paediatric patients (Table I).

Finally, during the period of study, 2.0 % of adult patients and 1.8 % of paediatric patients suspended HEN, mostly due to nutritional discharge (Table I).

DISCUSSION

HEN is a practice in constant growth. The study by Mundi et al., carried out in 2017, refers to approximately 250,000 adults with HEN in the US (10), which represents a large increase compared to the 152,000 patients (adult and paediatric) reported in 1992 (11). In the multicentre study carried out in Poland, 4586 patients with HEN were reported during a one-year period (3). The Italian study showed an increase in HEN, with a mean point prevalence of 464 ± 129 cases/million inhabitants (12). On the other hand, a recent study carried out by Palchaudhuria et al. reports that there were 80,080 hospital admissions during the study period and a discharge with HEN of 2,527 patients (3.2 %) (13).

In Argentina, there were no reports regarding the prevalence of this practice. There are no national registries, and its practice is not formally regulated.

In the present study, the teams responsible for patient follow-up consisted of a physician, a nurse, and a dietitian. The physician and dietitian conducted monthly home visits to monitor clinical and nutritional variables, an approach aligned with international publications (14,15). At the beginning of the treatment, nurses were responsible for training patients and caregivers in the proper handling and administration of EN, with focus on hygiene practices, equipment use, and the recognition of potential complications (16).

Following this initial phase, and depending on the complexity of the case, nurses visited the patient two (2) to seven (7) times per week to check vital signs, manage ancillary supply stocks, and ensure the integrity and safety of the nutritional support (NS) access. This approach may be related to the treatment safety observed in the population included in the present study.

Patients' access to HEN depends mainly on their social coverage (social security or private system) and is not covered by the health authority. The patients included in this study belong to the subgroup with social security and private system coverage. Nevertheless, when comparing our total number of patients with those presented in international reports, we have a non-inferior experience, considering our economic and national limitations (12,17,18).

Most of our patients were adults (69.8 %), which is lower than the data reported by Spain (97.6 %) in 2007 but similar to that reported by Australia (64.5 %) (19-21).

Our report shows similar data regarding pathologies to those observed in various international reports (17,18). The majority of our patients presented with neurological pathology as their main indication (4,22). Nonetheless, the percentage of oncological patients was lower (head and neck 3.4 % + digestive tumours 8.4 %) compared to the percentages reported by the NADYA teams (head and neck 17.6 % + digestive tumours 7.2 %) and by Folwarski et al. in 2020 (head and neck 15.7 % + digestive tumours 7.6 %) (3,23). This could perhaps be interpreted as a lack of knowledge regarding NS prescription in this group of patients or as barriers to proper access due to reimbursement issues.

In our study, EN formulas were most frequently infused using a non-continuous infusion method. For adult patients, cyclic infusion was used, while for paediatric patients, intermittent infusion was the preferred method. Most patients used a pump for infusion. This contrasts sharply

with the report from Poland in 2020-2021, where the primary infusion method was bolus administration. (3,24) Current evidence from different reports suggests that the use of bolus feeding is increasing in these groups (25,26). The reasons for its use are based on the fact that bolus feeding is more physiological, resembling the normal eating pattern, it is easier to adopt in the home environment and allows the patient a freer lifestyle.(7,27,28) Also, recent studies have shown that no significant differences in safety and tolerance were observed between continuous feeding and bolus feeding (29-31), and some guidelines currently recommend its use (22); importantly, in the latest ESPEN Guideline in this regard, bolus or intermittent continuous or continuous infusion through a pump may be used depending on clinical need, safety and level of precision required (16).

Regarding complications in these patients, a single-centre cohort study of patients discharged with HEN confirmed that this population, even after adjusting for the presence of comorbidities and a diagnosis of malnutrition, was more likely to be readmitted within 30 and 90 days (32). Among these readmissions, it was observed that 20.5 % were directly related to EN complications. The three most important causes were problems with access, gastrointestinal symptoms due to EN, and alterations in sodium related to diet and lavage volume (33).

In our report, the rate of complications was very low. This can be attributed to the fact that most patients had been on HEN for over a year, reducing the probability of complications. They had secure NS access and demonstrated proven tolerance to the EN formula. However, complications related to both the EN formula (4.6 %) and EN access (4.0 %) were more frequent in paediatric patients.

When researching the most frequently used EN formulas in the HEN setting, one of the most thorough studies on this topic was the Polish survey of 2020. This survey revealed that 40 % of their patients were

using a protein-enriched formula, 28 % an isocaloric formula, and 16 % a hypercaloric formula (3).

In our study, we used a slightly different classification. We reported 48.2 % of patients using a normocaloric and normoproteic formula, 26.4 % using a high-energy and high-protein formula, and 18.9 % using a normocaloric and high-protein formula**.** Interestingly, in the paediatric population, the normocaloric and normoproteic formula formula was most frequently used, regardless of pathology. In contrast, among adult patients, certain groups were more commonly prescribed high-protein formulas**.** In our practice, we did not use blenderized EN formulas for our HEN patients, despite publications recommending their use, citing advantages such as promoting dietary adaptation with real food, respecting food diversity and culture, lower cost, and easier access to ingredients (34). From our perspective, the disadvantages outweigh the benefits. Among the most significant drawbacks are the increased time required by professionals to calculate dietary plans, greater difficulty in adjusting daily nutritional needs, and reduced microbiological and chemical stability (34).

Finally, we must acknowledge the limitations of our study, as it is a retrospective cross-sectional study with biases inherent to this design. Additionally, the results have limited generalizability, as they represent only patients with social security or private healthcare coverage. The classification differences of EN formulas between this study and others may also hinder direct comparisons.

The lower percentage of oncological patients observed might indicate gaps in NS prescription for this group, suggesting barriers to access or a lack of awareness that warrants further exploration. Regarding infusion method trends, while bolus feeding is increasingly recommended in guidelines and studies, its use was less common in this cohort, potentially reflecting resistance to adopting newer practices or variability in patient preferences.

Nevertheless, we believe that this line of work, related to HEN registries, and its results are crucial for a deeper understanding of the practice and for identifying opportunities to improve this essential healthcare process for patients requiring safe and effective treatment at home.

CONCLUSIONS

This study is to our knowledge the first of its kind in Latin America, providing a comprehensive analysis of HEN based on the experience of a large, multidisciplinary team. It highlights the predominance of neurological conditions as the main indication for HEN in adult and paediatric patients, with a higher prevalence of oncological conditions in adults. Gastrostomy was the most common access method used, and non-continuous infusion was the preferred modality. The low complications rates, particularly in long-term on NS access, demonstrate the safety of these interventions. These findings underscore the need for structured data collection and regulation to enhance patient care and outcomes in the region.

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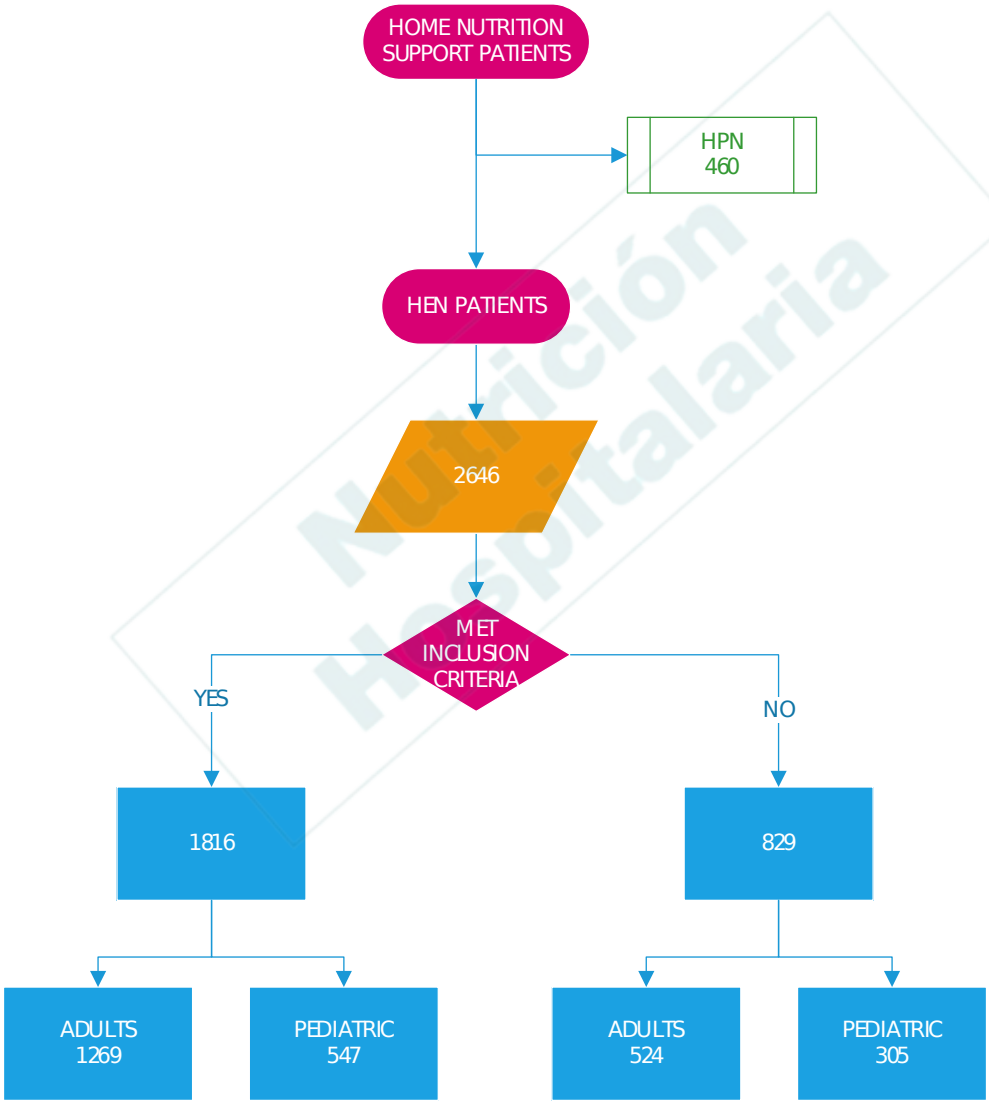

Figure 1. Study flowchart.

Table I. Baseline characteristics

	HEN adults (*n* = 1269)	**HEN paediatrics (*n* = 547)**
Gender (male:female)	46.2 % (586): 53.8 % (683)	55.2 % (302): 44.8 % (245)
Age	69 (42-82)	8 (4-12)
Pathology		
Head and neck tumors	3.4 % (47)	NA
Cardiology	0.6 % (8)	2.9 % (16)
Digestive	4.1 % (52)	8.4 % (46)
Endocrinology	0.7 % (9)	0.9 % (5)
Genetic/congenital	1.1 % (14)	15.4 % (84)
Neurology	77.9 % (989)	67.8 % (371)
Digestive tract tumors (not head and neck)	8.4 % (106)	1.3 % (7)
Others	1.1 % (14)	1.8 % (10)
Psychiatry/Psychology	1.3 % (17)	0.2 % (1)
Respiratory	1.0 % (13)	1.3 % (7)
Active oncology disease		
Yes	11.7 % (149)	1.3 % (7)
Actual body weight (kg)	60 (49-69)	20.8 (14-29)
Usual body weight (kg)	67.5 (55-75)	25 (20-51)
Height (m)	1.62 (1.55-1.70)	1.15 (0.97-1.33)
BMI (m^2/kg)	22.2 (19.4-24.8)	15.7 (13.8-18.3)
Subjective global assessment		
A	38.8 % (493)	34.6 % (189)
B	53.7 % (681)	57.4 % (314)

C	7.5 % (95)	8 % (44)
Type of home NS		
EN	99.8 % (1267)	99.1 % (542)
EN + PN	0	0.5 % (3)
EN + OS	0.2 % (2)	0.4 % (2)
EN access		
Gastrostomy	65.5 % (831)	71.3 % (390)
Jejunostomy	4.9 % (62)	0.5 % (3)
Nasogastric tube	27.9 % (354)	28.0 % (153)
Nasojejunal tube	1.7 % (22)	0.2 % (1)
Primary EN mode		
Continuous	42.3 % (537)	15.7 % (86)
Non-continuous	57.3 % (732)	84.3 % (461)
Cyclic	42.3 % (537)	25.8 % (141)
Bolus	4.1 % (52)	17.7 % (97)
Intermittent infusion	11.3 % (143)	40.8 % (223)
Infusion pump used		
Yes	98.1 % (1245)	95.4 % (522)
No	1.9% (24)	4.6% (25)
EN volume (ml)	1500 (1000.0-1500.0) 1364 +/- 394*	1100 (1000-1450) 1158 +/- 357*
EN calories		
Total (kcal/day)	1500 (1330-2000) 1582 +/- 462*	1200 (910-1500) 1182 +/- 417*
kcal/kg/day	27.8 (22.7-34)	57.9 (38.5-84.4)
EN protein (g)		
Total g/day	66.0 (52.0-80.0) 67.3 +/- 26.9*	28.8 (22.0-38.0) 31.4 +/- 15.8*
g/kg/day	1.15 (0.91-1.50)	1.50 (1.00-2.06)
Time in HEN (days)	473 (149-1343)	1168 (486-2092)
Time in HEN (years)	1.29 (0.4-3.68)	3.2 (1.33-5.73)

EN access complication		
No	97.7 % (1240)	97.1 % (531)
Ostomy infection	0.1 % (1)	0.2 % (1)
Access occlusion	0.2 % (3)	0.4 % (2)
Ostomy leakage	0.3 % (4)	1.3 % (7)
Tube/Ostomy rupture	0.4 % (5)	-
Accidental tube/ostomy remove	1.3 % (16)	1.1 % (6)
HEN suspension	2.04 % (26)	1.82 % (10)
Discharged	1.10 % (14)	0.91 % (5)
Readmission	0.63 % (8)	0.73 % (4)
Programmed admission	0.15 % (2)	0.18 % (1)
Death	0.15 % (2)	-

All continuous data in the present table are expressed as median and Quartile 1-Quartile 3, except for the values marked with *, which are expressed as mean and standard deviation. HEN: home enteral nutrition; EN: enteral nutrition; PN: parenteral nutrition; OS: oral supplementation.

Table II. Pathology

Pathology	Time in HEN (years)	
	Adult	Paediatric
	Median IQR, Q1-Q3	Median IQR, Q1-Q3
Head and neck tumours	1 (0.3-2.1)	N/A
Cardiology	0.4 (0.3-1)	3.4 (1-5.5)
Digestive	1 (0.2-3.6)	3 (0.8-5.7)
Endocrinology	1.1 (0.5-2)	2.4 (2.3-2.8)
Genetic/congenital	2.8 (0.8-10.4)	2.8 (1.1-6.1)
Neurology	1.5 (0.5-4.2)	3.4 (1.4-5.7)
Digestive tract tumors (not head and neck)	0.3 (0.1-1)	0.2 (0.2-1.1)
Psychiatry/Psychology	1.1 (0.1-1-5)	7.1
Respiratory	1 (0.7-2.6)	3.6 (3-6.9)

All continuous data in the present table are expressed as median and Q1-Q3. Q: quartile.

Table III. Nutrition access comparison

	Long term EN access (n = 1286)	Short term EN access (n = 530)	p-value Chi^2 test
Adult: paediatric	69.4 % (893): 30.6 % (393)	70.0 % (376): 29.1 % (154)	0.526
Gender (M: F)	52.1 % (670): 47.9% (616)	41.1 % (218): 58.9 % (312)	< 0.001
Active oncology disease Yes	8.6 % (95)	11.5 % (61)	< 0.006
> 8 weeks EN Yes	78 % (1003)	22 % (117)	< 0.0001
Infusion pump use Yes	96.8 % (1245)	98.5 % (522)	0.055
EN complications No Diarrhea Constipation Bloating & vomiting	96.2 % (1237) 1.3 % (17) 1.3 % (17) 1.2 % (15)	95.4 % (506) 1.0 % (5) 1.5 % (8) 2.1 % (11)	0.494
EN access complication No Periostomy infection Access occlusion Periostomy leakage	98.1 % (1262) 0.2 % (2) 0.3 % (4) 0.9 % (11)	96.0 % (509) - 0.2 % (1)	< 0.001

Tube/Ostomy rupture Accidental tube/ostomy disposal	0.3 % (4) 0.2 % (3)	- 0.2 % (1) 3.6 % (19)	

M: male; F: female. EN: enteral nutrition.

Table IV. Pathology, patient type and EN formula

ADULT				
	Normocaloric and normoproteic formula	**Normocaloric and high-protein formula**	**High-energy and high-protein formula**	**High-energy and normoproteic formula**
	% (n)	***% (n)***	***% (n)***	***% (n)***
Head and neck tumours	19.1 % (9)	12.7 % (6)	6.4 % (3)	61.7 % (29)
Cardiology	37.5 % (3)	12.5 % (1)	12.5 % (1)	37.5 % (3)
Digestive disease (non-malignant)	26.8 % (11)	17.1 % (7)	0 % (0)	56.1 % (23)
Endocrinology	25.0 % (2)	62.5 % (5)	0 % (0)	12.5 % (1)
Genetic/congenital	50.0 % (8)	12.5 % (2)	25.0 % (4)	12.5 % (2)
Neurology	41.0 % (396)	25.7 % (248)	2.3 % (22)	31.1 % (300)
Digestive tract tumors (not head and neck)	23.7 % (23)	17.52 % (17)	1.0 % (1)	57.7 % (56)
Psychiatry/Psychology	26.7 % (8)	26.7 % (8)	0 % (0)	46.7 % (14)
Respiratory	18.2 % (2)	27.3 % (3)	0 % (0)	54.5 % (6)
Paediatric				
	Normocaloric and normoproteic formula	**Normocaloric and high-protein formula**	**High-energy and high-protein formula**	**High-energy and normoproteic formula**
	% (n)	***% (n)***	***% (n)***	***% (n)***
Head and neck tumours	-	-	-	-
Cardiology	80.0 % (12)	0 % (0)	20.0 % (3)	0 % (0)
Digestive disease (non-malignant)	73.0 % (24)	12.0 % (4)	15.0 % (5)	0 % (0)

Endocrinology	100.0 % (4)	0 % (0)	0 % (0)	0 % (0)
Genetic/congenital	76 % (65)	4.0 % (3)	18.0 % (15)	2.0 % (2)
Neurology	71.0 % (252)	6.0 % (23)	15.0 % (53)	8.0 % (28)
Digestive tract tumors (not head and neck)	72.0 % (5)	14.0 % (1)	0 % (0)	14.0 % (1)
Psychiatry/Psychology	0 % (0)	0 % (0)	100.0 % (1)	0 % (0)
Respiratory	72.0 % (5)	0 % (0)	14.0 % (1)	14.0 % (1)

Table V. Enteral nutrition formula: complications vs. formula type

Complications	**Formula type**				**Total**
	Normocaloric and normoproteic formula	**Normocaloric and high-protein formula**	**High-energy and high-protein formula**	**High-energy and normoproteic formula**	
No	45.8 % (833)	17.8 % (324)	6.4 % (116)	25.4 % (462)	1735
Yes	2.1 % (39)	1.0 % (19)	0.1 % (3)	1.1 % (20)	81
Total	872	343	119	482	1816
Complications: constipation, diarrhoea, blotting & vomiting.					
Chi² test					
	Value	**d.f**	***p***		
EN formula complications	4,212	3	0.239		