

Epidemiological and nutritional profile of home enteral nutrition users

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Abstract

Nutritional therapy in the home setting contributes to the recovery of health status of patients and presents lower cost when compared to hospital enteral nutrition. However, in clinical practice, patients and their families have difficulties in performing procedures related to enteral nutrition. This study aimed to identify the epidemiological and nutritional profiles of enteral nutrition users. This is a cross-sectional study with administration of questionnaires and anthropometric measurements for the understanding of socioeconomic and nutritional profile, and variables associated with the use of this therapeutic modality. Only 31.6 % of users leave the hospital with referral and counter-referral instruments. The prevailing diseases were neurological disorders (63%). The average time of use of therapy was 28 weeks with predominant use (53%) of industrial formulations provided by the municipality (37%). Application of the Subjective Global Assessment indicated that 66.7% of the subjects were classified as moderately malnourished. Results point to the need for effective integration between different levels of health care and the need of further studies on the profile of home enteral nutrition in the country.

Keywords: Enteral Nutrition. Home Care Services. Nutritional Status. Epidemiology. Health Profile.

Introduction

Nutritional therapy (NT) can be understood as a set of therapeutic procedures aiming at maintaining or recovering the nutritional and clinical status of the patient through enteral nutrition (EN) or parenteral nutrition.¹ From this perspective, EN, which can be solely or partially applied, uses industrial or homemade formulas especially developed for use in tubes. EN performed in the home setting characterizes the home enteral feeding therapy (HEFT).²

The use of HEFT facilitates the recovery of the patient's health because it reduces the risk of infections; contributes to the improvement of the nutritional status; provides a better therapeutic response; reduces the incidence of complications; humanizes care, reintegrating the patient to the social life; and is less costly when compared to hospital enteral nutrition.³

In clinical practice, however, it has been observed that patients and relatives have difficulties in performing enteral feeding properly, which unfortunately may result in complications that may compromise the patient's recovery and contribute to the interruption of treatment. Moreover, most users cannot afford nor can rely on government aid to purchase industrial enteral formulas to maintain HEFT.² As a result, they prepare the diets at home, most often without guidance, with risk of contamination and significant loss of nutrients.⁴

It is important to note that, upon hospital discharge, patients and family are instructed in diverse, complex ways, about foods and nutrition, which makes care difficult in daily living.⁵

In view of the above difficulties, the need for providing home care services in a distinctive and humanized way becomes clear. Such services might include health education and training of caregivers and patients to ensure continuity of the treatment properly. Indirectly, such activities stressed the importance of the health professional to be integrated to the diverse levels of care and be part of multi-skilled teams.⁶

In Brazil, studies relating to home enteral nutrition are few and restricted to some regions. The few data available underline the importance of defining the epidemiological profile regarding HEFT, aiming for the establishment of national legislation to ensure the development of this therapeutic practice in the country.²

Based on the above, the aim of this study was to identify the epidemiological and nutritional profile of users of enteral nutrition in the municipality of Alfenas, Minas Gerais.

Methodology

It is a cross-sectional and observational study with quantitative data analysis.⁷ Sample was comprised of individuals who were already using home enteral nutrition and individuals using EN who were discharged from hospital at the time of the study. The Family Health Strategy (FHS) units of the town and a hospital were partner institutions providing data from the records of the patients. Therefore, it is a study of municipal representativeness, also including individuals residing in rural areas. The criteria for inclusion were: residing in the area of the municipality, having availability to receive visits at home for the collection of data, and being in use of home enteral feeding during the time of the study. All individuals who met these criteria were invited to participate in the study and, after signing the Free and Informed Consent Form were included in the sample.

The present work was approved by the Research Ethics Committee of the Federal University of Alfenas (UNIFAL-MG) under process number 154/2011.

The variables studied involved the administration of questionnaires by trained researcher, to know the individuals' socioeconomic profile and use of enteral nutrition. In addition, the Subjective Global Assessment (SGA)⁸ tool was applied, and anthropometric measurements of arm circumference (AC) and triceps skinfold (TSF) were made. For the first measurement, an inextensible measuring tape in centimeters was used, with precision to millimeters, and TSF was determined by a Lange Skinfold Caliper[®] with precision to millimeters. Subsequently, the arm muscle circumference (AMC) was calculated by the following formula: $AMC = AC - (TSF \times 0.314)$.

To determine the nutritional status, the percentages of adequacy of AC, TSF and AMC were used, which were calculated according to the percentile distribution reference values proposed by Frisancho⁹ or Burr & Phillips,¹⁰ according to the individuals' age. The referred percentages were interpreted as per classification suggested by Blackburn & Thornton.¹¹ Data were analyzed descriptively.

Results

The group under study was aged 67.5 years on average, ranging from 18 to 93 years; 52.6% (n=10) were female, and 47.4% (n=9) were male. The average income corresponded to 2.9 (\pm 3) minimum wages. None of the participants lived alone, but only 10.5% (n=2) had skilled support to perform the required care. Relatives assisted the majority of the individuals and only one individual counted on a caregiver who was not member of the family.

Only 31.6% (n=6) of the individuals were discharged from the hospital with some referral instrument, i.e., the directing of the patient to a primary care unit or home care. The diseases that led to the use of HEFT were predominantly neurological (63%), followed by cancer (21%) and other diseases 16%. In addition, 78.9% (n=15) of the participants had comorbidity associated with the main diagnosis. The average time of nutritional care by the time of data collection was 28 weeks, ranging from one to 104.3 weeks.

The prevailing EN access route was nasogastric feeding tube, used by 63% (n=12) of the individuals, followed by nasogastric tube (21%) and gastrostomy (16%).

Regarding complications resulting from the use of HEFT, 26.3% (n=5) of the individuals did not report any occurrence, but 52.6% (n=10) showed at least one complication, and 21.1% (n=4) two or more complications. Description of the complications can be found on Table 1.

Table 1. Complications arising from the use of EN in HEFT, Alfenas-MG, 2012. (n=19)

| Complications | N | % |
|--------------------|---|----|
| Diarrhea | 8 | 42 |
| Abdominal bloating | 4 | 21 |
| Removal of tube | 4 | 21 |
| Nausea or vomiting | 3 | 16 |
| Other | 2 | 11 |

EN: Enteral Nutrition, HEFT: Home Enteral Feeding Therapy

Regarding the type of diet consumed, it could be seen that 52.6% (n=10) of the individuals used industrial formulas, followed by 42.1% (n=8) of users who used industrial formulas combined with homemade formulations. The studied municipality counts on a government program that supplies industrial formulas, and 36.8% of the subjects obtained the formulas through this program, followed by 31.6% who purchased it. It was also found that 5.3% (n=1) of the sample depended solely on donations. The other participants (26.3%) either obtained the formulas from the government program or from purchase or donation.

We found that 10.5% (n=2) of the individuals consumed pureed foods orally as a complementary form of nutrition. All participants were on medication, and only one (5.3%) received medication in injectable form; the others (94.7%) received it by infusion through the tube. In quantitative terms, 14.3% of individuals used only one medication, and 52.4% two to four medications. Polypharmacy was present in 33.3% (n=7) of the cases.

When receiving hospital discharge, all patients or caregivers were informed on the procedures relating to the use of EN. Among the subjects and caregivers involved, 61.9% felt comfortable in starting treatment at home due to clear guidance received. However, 38.1% reported fear and insecurity to start using HEFT. During the home treatment, 31.6% (n=6) of the individuals were readmitted to hospital, most of them (83.3%) due to aspiration pneumonia and tube replacement, complications from the use of HEFT.

Regarding SGA, when caregivers were asked about the change of weight in the past six months, it was found that 31.6% (n=6) had some information on the past status of the patients, which made it difficult to estimate weight loss. In the previous two weeks, caregivers of 57.9% (n=11) of the individuals reported that there was no weight change.

All patients showed changes in food intake, of which 89.5% (n=17) began to use enteral tube feeding exclusively, and 10.5% (n=2) maintained oral feeding with suboptimum diet.

Although the majority of the patients (61.9%) did not present any persistent gastrointestinal alteration for more than two weeks, the prevailing symptom was diarrhea (23.8%), followed by nausea (9.5%) and vomiting (4.8%). Change in functional capacity was also observed in all individuals: 73.7% (n=14) were in bed, and 26.3% (n=5) had suboptimum function.

Main diagnosis showed that the majority (52.4%) of the patients had diseases with moderate metabolic stress, followed by pathologies with high metabolic stress (23.8%), low (14.3%), and no stress (9.5%).

Analysis of the results of the physical assessment (Table 2) showed moderate loss of subcutaneous fat in 47.6% of the individuals and moderate muscle consumption in 42.8% of the individuals. None of the patients had sacral edema or ascites. In final SGA categorization, 73.7% (n=14) of the individuals were classified as moderately malnourished, and the remaining 26.3% (n=5) as severely malnourished.

Table 2. Characterization of the SGA and physical examination in users of HEFT, Alfenas-MG, 2012. (n=19)

| | Loss of subcutaneous fat % | Muscle consumption % | Ankle edema % |
|----------|----------------------------|----------------------|---------------|
| Normal | 0 | 0 | 71.4 |
| Slight | 23.8 | 28.6 | 14.3 |
| Moderate | 47.6 | 42.8 | 14.3 |
| Severe | 28.6 | 28.6 | 0 |

SGA: Subjective Global Assessment; HEFT: Home Enteral Feeding Therapy

Calculations of the percentages of adequacy in the anthropometric assessment showed predominance of malnutrition, as shown on Table 3.

Table 3. Percentages of adequacy, according to the anthropometric assessment, of users of HEFT, Alfenas-MG, 2012. (n=19)

| % adequacy | AC | | TSF | | AMC | |
|------------|----|------|-----|------|-----|------|
| | n | % | n | % | N | % |
| < 70 – 90 | 13 | 68.4 | 12 | 63.2 | 11 | 57.9 |
| 90 – 110 | 5 | 26.3 | 3 | 15.8 | 7 | 36.8 |
| >120 | 1 | 5.3 | 4 | 21.1 | 1 | 5.3 |

HEFT: Home Enteral Feeding Therapy.

Discussion

Several authors report the lack of studies on home enteral nutrition,^{2,12,13} which made it difficult to compare with other studies in similar conditions. In an innovative effort in the area, the working team of the Home Artificial and Ambulatory Nutrition (NADYA) of the Spanish Society of Parenteral and Enteral Nutrition published on a yearly basis analyses made based on the records of users of HEFT in the country.¹⁴ This work can be considered an inspiration for future Brazilian publications; so it would be possible to encourage discussions on the theme and show the representativeness of this therapy in Brazil.

With the purpose of building a reliable database, an electronic protocol for patients on HEFT was created by the Municipal Health Secretary of Curitiba.¹⁵ Such instrument can be an example for the development of a national system for safe data collection for the improvement of this area of research. The mean age of the studied group was similar to that found in other works^{12,16}, and Paccagnella et al.¹² also found a significant age range between the participants.

It is worth noting that when using the records of EN patients of the hospital unit and FHS units, the study population might be underestimated, once there is the possibility of individuals on HEFT who have not sought such health services yet.

When analyzing the relationship between the patient and the caregiver, it could be seen that most of the studied sample did not count on professional assistance, and the family performed the work. Similar result was found in the study by Naves & Tronchin,¹⁷ because 97.3% of the caregivers were also relatives.

Despite the reported guidance at the time of hospital discharge on the use of EN, a small number of patients left the hospital without any instrument of referral to a primary healthcare unit or home care, and this prevents the continuity of care of patients on HEFT. Serra & Rodrigues¹⁸ mention that operational deficiencies hinder the practice of referral and counter-referral systems to the various health care levels. Such operational deficiencies may contribute to worsening the health conditions of the patient and hinder the completeness and continuity of care.

Neurological diseases, followed by cancer, were the main causes for indication of HEFT, similar to the results found by Frías et al.¹⁴ However, they are different from the distribution of diseases found by De Luis et al.,¹⁶ being head and neck cancer and infection by HIV the two main causes for the use of HEFT.

Regarding the average time of use of HEFT, there was a significant variation in the studies analyzed. The study conducted by De Luis,¹⁶ mentioned earlier, reported similar duration of home enteral nutrition, but the NADYA¹⁴ group reported that patients stayed in the care program for more than two years. In the study carried out by Naves & Tronchin,¹⁷ the average length of time was slightly shorter than that found in the present study, approximately 15.4 weeks. The longer treatment time reported by the Spanish group is explained by the HEFT structure in the country, which is regulated by law and financed by the public system.¹⁹

In European studies^{12,16}, nasogastric intubation was the prevalent route of insertion of the feeding tube. In a national study,¹⁷ the majority of the patients (51.4%) used gastrostomy. There are recommendations to consider long-term access routes, such as gastrostomy and jejunostomy when there is the need for treatment for more than four weeks²⁰, which is the case of the present study and other works cited.

Despite the high percentage of diarrhea found in this study, it is important to note that it took less than two weeks, as indicated on the SGA. Moreover, despite the lower percentage (3.3%), diarrhea was the prevailing complication associated with the use of HEFT in the study conducted by De Luis et al.¹⁶ The occurrence of such adverse effect can be explained by the predominant choice for nasoenteric tube feeding. It is known that the individuals of this study used intermittent diet feeding, and that the health care units in the town supplied a standard formula, without specific adaptations, which might have caused high osmotic flow and the occurrence of diarrhea.²¹ Added to these factors is the excessive manipulation of artisanal diet, which increases the risk of contaminations and are conducive to chemical and physical instability.²²

The percentage of hospital readmission in another study was as low as 3.7%. Such discrepancy, compared to our results (31.6%), may be due to the origin of the characteristics of said study, which required: start of EN still in hospital and good tolerance for a period of five days; training delivered to caregivers or the patient on the use of the therapy; home setting properly suitable for the implementation of HEFT, and systematic follow-up of the patients by a skilled team. These results suggest the need for specific care for patients on HEFT in order to reduce or prevent more serious complications, such as aspiration pneumonia, which will affect the patient's overall health condition.

The municipality where the study was conducted had a public program of supply of industrial formulas for enteral nutrition, which likely explains why most of the sample individuals only uses this type of formulation. In another study,¹⁷ there was prevalence of the use of semi-artisanal diets, followed by artisanal and industrial diets. It is known that artisanal formulas are more susceptible to microbiological contaminations and more difficult to meet the recommended calorie and nutrients levels.⁴ Additionally, Zaban & Novaes³ mention that home care reduces maintenance costs, besides contributing to social inclusion and humanized care of the patient. Therefore, there is a need for programs and legislation to promote HEFT in the country.

It is worth noting that 94.7% of the patients that were assessed used medications via tube, data corroborated in the study conducted by Naves and Tronchin,¹⁷ which shows that 94.6% of the patients also used this route for administration of medications. These results point to the need for the training of caregivers regarding drugs administration to prevent complications such as tube occlusion and interaction between nutrients and medication.

Limited knowledge of caregivers on the actual health condition of patients and the lack of suitable equipment for a satisfactory nutritional evaluation by the professionals hinder the identification and categorization of the weight loss of patients on HEFT, as could be seen in the present study. Paccagnella¹² et al. identified an average weight loss of 22.9% in individuals on similar treatment. Such definition was possible because the patients' anthropometric data, before and after treatment, were kept in electronic medical records.

Disagreeing with other data,^{12,16} the oral route was rarely indicated or encouraged. Additionally, most of the participants, as mentioned in a previous study,¹⁴ need help due to functional limitations. Thus, once more the need for training and qualification and implementation of support systems for caregivers becomes clear.

The results described on Table 3 show the prevalence of malnutrition in the studied group. Maybe if there were more oral stimulation, the results could be different, once De Luis et al.,¹⁶ when they evaluated a group of patients treated with oral supplementation and another group with EN, observed that the weight, triceps skinfold and arm circumference values were higher in the first group.

With respect to the final SAG categorization, Azank et al.,²³ evaluated the nutritional status indicators of patients on enteral nutrition via gastrostomy and nasogastric tube and found high percentages of malnutrition, especially among those using nasogastric tube, which corroborates

the data presented. The high rate of malnourished patients is justifiable in face of the reality encountered in this study: a deficient system of referral of patients for continuity of care; high degree of dependence required by neurological diseases; lack of encouragement for oral feeding and poor training of the family members and/or caregivers to deal with patients on HEFT.

Conclusion

With respect to the profile of the HEFT users studied, that there is a great variation between indication, age, time of use and type of guidance received for home care. It is a group that demands skilled health care; the family members and caregivers also showed lack of information about the therapy. The need for development of policies or at least protocols to systematize the care of these patients is clear.

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