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Strengthening the care of those with special dietary needs: an experience with blenderized diets, in Piraquara-PR

Fortalecendo a rede de atenção às necessidades alimentares especiais: uma experiência com fórmulas enterais semiartesanais, em Piraquara-PR

Luna Rezende Machado de Sousa[1,2]
Karin Luciane Will[2]

[1] McGill University, Department of Human Nutrition, MSc program. Montreal, Canada.

[2] Prefeitura Municipal de Piraquara, Secretaria Municipal de Saúde, Piraquara-PR, Brasil

Correspondence
Luna Rezende Machado de Sousa
E-mail: lunarms@gmail.com

Abstract

This is an experience report about the implementation of a Municipal Protocol of Special Diets, to attend to those with special dietary needs, using blenderized tube feeding. The objective of this experience was the strengthening of this health care network, due to its increasing demand and lack of public budget. Prior to this Protocol, the municipality provided 50% of the patient's nutritional needs through industrialized formulas, the rest should be funded by the family. The objectives of this Protocol were: to guarantee 100% of the patient's nutritional needs, through blenderized diets; increase the number of nutritionists to enable nutritional monitoring at home; and ensure its financial viability. For that, enteral diets for adults and children - of 1,500 Kcal, 1,800 Kcal and 2,100 Kcal - were prepared based on formulas previously analyzed. The formulas consisted of a mixture of basic foods and industrialized enteral diet, provided by the municipality. After 1 year of its implementation, the average cost per patient treated with enteral formulas fell by 48%, which allowed the hiring of more nutritionists for the City's Primary Health Care. As a space for discussion and support, this initiative had a Working Group on nutritional care in enteral therapy, composed of nutritionists from neighboring municipalities and the Regional Council of Nutritionists of Paraná. It is hoped that this work will stimulate the sharing of governmental experiences focused on the nutritional care of people with special dietary needs.

Keywords: Nutritional Therapy. Enteral Nutrition. Home Care. Health System.

Resumo

Trata-se de relato de experiência sobre a implantação de um Protocolo Municipal de Dietas Especiais, para atendimento aos portadores de necessidades alimentares especiais, valendo-se de fórmulas enterais semiartesanais. O objetivo desta experiência foi o fortalecimento desta rede de cuidados, que apresenta demanda crescente e carência de orçamento público. Antes deste Protocolo, o município fornecia 50% das necessidades nutricionais do paciente por meio de fórmulas industrializadas, o restante devendo ser custeado pela família. Este Protocolo teve como metas: garantir 100% das necessidades nutricionais dos pacientes, por meio de fórmulas semiartesanais; aumentar o quadro de nutricionistas para viabilizar o acompanhamento nutricional em domicílio; e garantir a viabilidade financeira desta rede. Para tal, foram elaboradas dietas enterais para adultos e crianças, de 1.500 Kcal, 1.800 Kcal e 2.100 Kcal, com base em fórmulas anteriormente analisadas quimicamente. As fórmulas consistiram em uma mistura de alimentos – contidos na Cesta Básica – e fórmulas enterais industrializadas, fornecidas pelo município. Após um ano de sua implantação, o custo médio por paciente atendido com fórmulas enterais industrializadas caiu 48%, o que permitiu a contratação de mais nutricionistas para a Atenção Básica. Esta iniciativa contou, como espaço de discussão e apoio, com um Grupo de Trabalho sobre atenção nutricional na terapia enteral, composto por nutricionistas dos municípios vizinhos e do Conselho Regional de Nutricionistas do Paraná. Espera-se que este trabalho estimule o compartilhamento de experiências governamentais voltadas à atenção nutricional de portadores de necessidades alimentares especiais.

Palavras-chave: Terapia Nutricional. Nutrição Enteral. Assistência Domiciliar. Sistema Único de Saúde.

Experience contextualization

Population aging has caused changes in the epidemiological picture, such as the increased prevalence of Chronic Noncommunicable Diseases leading to the need for enteral nutrition therapy (ENT). Frequently, in these clinical situations, ENT becomes indispensable for prolonged periods, making its continuity at home convenient.[1-3]

Home enteral therapy is being increasingly used due to its proven benefits related to the patients' proximity to their family members, to the reduction of the risk of hospital contamination and to the lower expenditure on hospitalization.[1,2,4]

This picture represents a new challenge for the Unified Health System (SUS), since it is also responsible for the nutritional care of those with special dietary needs. It should be noted that the National Food and Nutrition Policy (PNAN) and the National System of Food and Nutrition Security (SISAN) also provide, in their guidelines and objectives, the guarantee of the Human Right to Adequate Food (DHAA) to those with special dietary needs.[1,2,4-6]

The home ENT can be performed with industrialized formulas, whose benefit is in its nutritional composition, osmolality, adequate stability and microbiological safety, tested by the industry. However, due to their high cost, they become impractical for most Brazilian families.[4,6] They are also difficult to cost for the SUS, since there is no specific financing for home ENT. For example, in Paraná, the cost of enteral diets is borne by the municipalities, and there is no specific state counterpart.[2,6] It should be noted that, in the hospital setting, industrialized enteral diets are funded by SUS in the authorized hospitals, in accordance to the Ordinance SAS/MS n. 120, of April 14, 2009.[7]

In this context, the use of blenderized diets (prepared only with *in natura* food, called handmade diet, or with *in natura* food and industrialized products, named semi-handmade diet) is often indicated for home ENT. To this end, states and municipalities have implemented clinical protocols for the monitoring of individuals with special dietary needs, including the provision of industrialized formulas and / or guidelines for guiding blenderized diets.[2,5]

Although high cost is the main factor limiting the use of industrialized enteral diets at home, several national and international studies have presented other justifications for the choice of blenderized diets, such as: increased tolerance of the volume of diet administered; improvement in constipation; reduction of the incidence of reflux and nausea. Many patients and families also opt for blenderized diets, since they are composed of more natural and homemade foods with elements usually used by the family, contributing to psychological factors closely associated with feeding. It should be emphasized that these same researchers reinforce the need for prescription and follow-up by a nutritionist for the use of handmade enteral diets.[5,8-11]

It is also true that some studies point out the use of the blenderized diets formulas as insecure and ineffective; however, some of them have been financed by laboratories that produce industrialized formulas.[12,13] Researchers point out that the *lobby* of the drug industries and nutritional formulas is the main factor for the judicialization of health due to its influence among associations, class entities and health professionals, which causes users and prescribers to consider the use of a certain nutritional formula as essential. And yet, they consider that the Judiciary System is not prepared

to judge on the supply of enteral formulas, by the lack of understanding of the subject. In a survey of lawsuits, it was observed that the nutritionist is rarely mentioned in the proceedings, either as a prescriber of the nutritional formula or as an expert of the judgment.[14]

The organization of care networks for people with special nutritional needs is essential for the strengthening of the SUS and guaranteeing the DHAA, under the pressure of industry and health judicialization.[5,6] Thus, this work aims to share the experience of implementation of the Municipal Protocol of Special Diets, using semi-handmade formulas, in the municipality of Piraquara, Paraná.

Methods

This is a description of the experience of implementing the Municipal Protocol of Special Diets, for nutritional attention to those with special dietary needs, using semi-handmade formulas. The experiment happened in Piraquara, a municipality with 106,132 thousand inhabitants, located in the metropolitan region of Curitiba / PR. It is among the poorest municipalities of Paraná, presenting the worst Gross Domestic Product *per capita* (GDP *per capita*) of Paraná in 2013.[15]

Context prior to experience

The implementation process of this Protocol, which standardizes the use of semi-handmade diets, started in March 2015. Before this, the municipality had a Protocol that guaranteed the supply of industrialized enteral formulas in sufficient quantity to supply 50% of the nutritional needs of the patients, the rest having to be borne by the patient.

As a largely underprivileged population, in practice, instead of buying the remainder of the industrialized formulas, many families diluted the supplied products to last until the date of the next receipt. Or, still, some families provided food liquefied by means of the probe, without direction and prescription. At that time, the health care network of Piraquara had only one nutritionist, who was responsible for several programs (Family Grant, Child Health Care, Special Diets). Thus, the nutritional follow-up of the patients receiving the formulas was limited to sporadic visits when some complication was reported in the diet administration.

Even the municipality paying only 50% of the amount needed, the annual cost of the Municipal Diets Program was R$ 200,000. In 2014, the average annual expenditure per patient was R$ 2,997.

Elaboration of the Protocol

After contracting the second nutritionist in the health care network of Piraquara, it was possible to add efforts to the elaboration of a new Protocol, whose objectives were:

- To ensure that patients on enteral nutrition therapy have 100% of nutritional needs achieved through mixed / semi-handmade enteral formulas.
- To ensure that patients in a clinical situation that contraindicates the use of mixed / semi-handmade enteral formulas receive industrialized formulas that guarantee 100% of their nutritional needs.
- To implement home-based nutritional follow-up of patients in home enteral therapy, through the hiring of nutritionists to the Family Health Support Centers (NASF).
- To ensure the feasibility of funding the Special Diets Municipal Program.

The definition of enteral formulas was based on experiments with semi-handmade formulations that had their physico-chemical and nutritional characteristics analyzed in the laboratory, such as the formulations of 1,800 Kcal and 2,100 Kcal used by the Municipal Health Department of Belo Horizonte.[3]

However, considering the difficulty of patients in purchasing staple foods, some ingredients of these formulations were replaced by industrialized enteral formula provided by the municipality. The ingredients replaced were: egg, corn-based commercial cereal, carrot, orange juice, castanha-do-pará, and albumin. So the patient is responsible for buying only milk, wheat flour, potato, soybean oil and sugar, which make up the Basic Food Basket. For diabetic patients, sugar was replaced by maltodextrin, also provided by the municipality.

Based on the combination of the same ingredients, a semi-handmade enteral formula was also developed to meet the needs of 1,500 Kcal / day for adults; and 1,500 Kcal and 1,800 Kcal / day for children under 10 years old. The comparison between the formulations used in Belo Horizonte[3] and those elaborated for the Protocol of Piraquara is shown in Table 1.

Table 1. Semi-handmade enteral formulations used by Belo Horizonte City Hall / MG in 2014, and elaborated for the Piraquara / PR protocol.

INGREDIENTS	Formulations of the Belo Horizonte City Hall[3]		Formulations of the Municipal Protocol of Special Diets of Piraquara				
	Adult		Adult			Infantile	
	1,800 Kcal	2,100 Kcal	1,500 Kcal	1,800 Kcal	2,100 Kcal	1,500 Kcal	1,800 Kcal
Integral milk (ml)[a]	500	500	500	500	500	500	500
Skimmed milk (ml)[a]	500	500	500	500	500	500	500
Wheat flour, toasted (g)	117	117	80	120	120	40	40
Boiled potato (g)	280	280	280	280	280	280	280
Soybean oil (ml)	39	52	30	39	48	30	30
Sugar (g) or Maltodextrin (g)[b]	27.6	27.5	30	30	60	30	30
Salt (g)	2	4	5	5	5	5	5
Powdered albumin (g)	11.6	29	-	-	-	-	-
Castanha-do-Pará (g)	2	2	-	-	-	-	-
Corn-based commercial cereal (g)	15	20	-	-	-	-	-
Boiled egg (g) [2 x / week]	45	45	-	-	-	-	-
Standard industrialized enteral diet based on milk or soy protein (g)	-	-	37	52	74	-	-
Standard industrialized enteral diet for children from 0 to 10 years old (g)	-	-	-	-	-	78.4	137
Juice (250 ml) Raw carrot (g) Orange juice (ml) Sugar (g)	55 180 13.8	55 180 27.5	-	-	-	-	-

[a] Patients are advised of the possibility of using 1 liter of semi-skimmed milk instead of mixing 100 ml of whole milk with 500 ml of skimmed milk.[b] For diabetic patients, sugar is replaced by maltodextrin, in an equal amount, provided by the municipality.

Studies show that the use of ingredients that leave a lot of residue in the sifting, such as meats and vegetables, damages the nutritional composition of the blenderized diets. The residues lost in the sifting process make the nutritional content lower than that estimated by the food composition tables.[4] Therefore, in order to avoid detriment to nutritional value, these foods were not used in semi-handmade formulations. Briefly, the original formulations, chemically tested,[3] underwent the removal of some *in natura* elements and the addition of industrialized diet.

After the changes were made, the nutritional value of the elaborated formulations was calculated, based on the TACO table[16] and on the labels of the industrialized diets. The nutritional composition of the semi-handmade formulas standardized in the Municipal Protocol of Special Diets of Piraquara is presented in Table 2.

Table 2. Nutritional composition of the semi-handmade enteral formulations of the Piraquara / PR protocol, elaborated in 2015.

Formulations	Calories	Carbohydrates		Proteins		Lipids		Fibers
	Kcal	(g)	%[a]	(g)	%	(g)	%	(g)
Infantile 1,500 Kcal	1,553.79	202.60	52.15	48.10	12.38	61.67	35.72	4.56
Infantile 1,800 Kcal	1,825.11	237.76	52.11	56.31	12.34	72.22	35.61	4.56
Adult 1,500 Kcal	1,524.60	210.18	55.14	49.68	13.03	54.65	32.26	5.48
Adult 1,800 Kcal	1,783.00	246.32	55.26	53.53	12.01	65.30	32.96	6.40
Adult 2,100 Kcal	2,073.60	289.15	55.78	57.15	11.02	77.60	33.68	6.40

[a] % refers to the macronutrient distribution in the formulations.

All formulations were shown to be normocaloric, normoprotein and normolipidic. As expected, by the nature of the ingredients, the fiber content of the formulations presented a percentage of adequacy around 20%.[17] Thus, there is a need for fiber supplementation. Therefore, the Protocol provided for the dispensing of fiber modules or the replacement of the standard industrialized formula by the industrialized form with fibers, according to the NASF nutritionist prescription.

The dispensation of protein module was also provided in the Protocol, in case of evaluation of the need and prescription of hyperprotein diet by the nutritionist of the NASF.

Some clinical situations contraindicate the use of blenderized diets,[8] and the Protocol included these exceptions: severe chronic renal failure (pre-dialysis or on dialysis); pressure ulcer grade III or higher; pre and post abdominal surgery; pre and post transplanted; and severe disabsorptive syndrome. For the patients in these situations, the provision of industrialized formulas for 100% of the nutritional needs was foreseen.

Although the Protocol relies on semi-handmade enteral formulas for children under 10 years of age, it is also planned to provide industrialized enteral formulas for patients in this age group, by prescription and justification of the need by the NASF nutritionist.

For the aid and standardization of nutritional assistance, the prescription forms of semi-handmade enteral therapy, the nutritional monitoring sheets and the term of the patient's commitment to the receipt of industrialized formulations were standardized.

The Protocol also established the nutritional monitoring of patients in home enteral therapy, with minimum monthly frequency, by NASF nutritionists. To this end, it was planned to hire three more nutritionists, aiming at the coverage of all Health Units of the Basic Attention Network.

Considering the reduction in the dispensation of industrialized diets (despite the amount to be provided by the preparation of semi-handmade formulations), it was estimated that the new Protocol would reduce annual costs with industrialized formulas by 25%. That is, since the annual cost was around R$ 200,000, it was foreseen the reduction to R$ 170,000.

Presentation of the Protocol to the Municipal Health Council

Health councils are deliberative, control and participation forums of the society in SUS management.[18] Thus, the implementation and alteration of health programs and policies, at the municipal level, depend on the approval of the Municipal Health Council.

The Municipal Protocol of Special Diets was presented by the two nutritionists to the Municipal Health Council of Piraquara. The main concern was that some advisers understood the new Protocol as merely a reduction in the dispensed volume of industrialized formulas. For this reason, the proposal of the use of the semi-handmade formulas, with monthly monitoring of the nutritionist, was explained in detail.

Counselors understood that the new Protocol would strengthen care for those with special nutritional needs through nutritional monitoring and dietary prescription to meet 100% of nutritional needs. Thus, the Protocol was unanimously approved by the Municipal Health Council.

Results

In the second half of 2015, after hiring another nutritionist, the Protocol was implemented. Despite the initial resistance of some patients who were already participating in the Diet Program, most of them presented good acceptance of the changes implemented.

The nutritional follow-up of patients using semi-handmade formulas increased the demand of nutritionists, responsible for nutritional assessments, prescriptions of enteral formulations and patient follow-up. The use of semi-handmade formulas allowed the addition of nutrient modules to supply specific needs, such as fiber and protein modules, provided by the municipality upon prescription of the nutritionist.

In case of complications with diet, the need to change the semi-handmade formula or exclusive use of industrialized formula (for the clinical situations that make up exceptions), the NASF nutritionist contacts the coordinating nutritionist of the Special Diets Municipal Program. These cases are evaluated individually by nutritionists and, when necessary, changes in diet are performed.

In 2017, the cost of the Diet Program was evaluated, based on the commitment notes, for the purchase of industrialized diets, issued between 2013 and 2016 by the Municipal Health Department. The annual cost of the program and the average annual cost per patient were observed in the period in question, as shown in Table 3:

Table 3. Annual cost of the Municipal Program of Special Diets and average annual cost per patient, in the period from 2013 to 2016, in Piraquara / PR.

Year	Annual program cost	Average number of patients seen monthly	Average annual cost per patient
2013	R$ 197,433	94	R$ 2,100[a]
2014	R$ 200,856	67	R$ 2,997[a]
2015	R$ 134,960	86	R$ 1,569[b]
2016	R$ 134,560	86	R$ 1,564[b]

[a] Cost prior to the implementation of the Protocol.

[b] Cost subsequent to the implementation of the Protocol.

Analyzing the values committed by the Diet Program, it is clear that after the implementation of the Protocol in 2015 there was a significant reduction in the average annual cost per patient. When comparing program expenditures in 2016 - one year after the implementation of the Protocol - with expenditures in 2013, there was a reduction of 26%, and compared with expenditures in 2014, a reduction of 48%. It is important to consider that the reduction of costs happened even in the midst of the inflationary increase in the price of the products.

The limited budget of Health requires its rational allocation, aiming at the best cost-benefit.[6] The implementation of the Protocol implied a reduction in the expenses of the Municipal Diets Program, without impairing the care of patients with special dietary needs. This economy made it possible to hire two more nutritionists in early 2016.

Reflections

In most cases, the implantation of this Protocol has led to the need of changing the dietary prescription received at hospital discharge, since many hospitals in the region prescribe industrialized enteral diet as the only option, on patient discharge, although most municipalities in the metropolitan area of Curitiba do not provide industrialized enteral diets.

Changing the nutritional requirements is a factor of conflict in the network of attention to those with special dietary needs. It is understood that, once the patient returns to his/her home and will be in nutritional monitoring by the NASF, his/her nutritional care is the responsibility of the municipality. However, hospital nutritionists claim that, as the patient will also continue to be followed up by the hospital where his/her treatment has been initiated, he/she should continue to follow the nutritional prescriptions received at the hospital. But, in most cases, it is not possible, given that the municipality cannot be responsible for the supply of products prescribed by another institution and that are not part of its clinical protocol.

Since the nutritional monitoring of the patient at home will be carried out by the municipality, as well as the provision of the necessary inputs, nutritional assessment and prescription are the responsibility of the NASF nutritionist. This often means having to deal with the resistance and frustration of the patient and his/her family members, as they have received different guidelines and prescriptions at the hospital. This problem is attenuated as the patient builds bond with the Primary Care health team, since the patient begins to recognize that, regardless of the hospital services he/she may pass through, when returning home, there will be reliable professionals who will give continuity to the treatment.

To avoid these conflicts, NASF nutritionists were instructed to contact the nutritionist responsible for the hospital prescription to report on the changes. However, this task is not easy.

Considering the large number of professionals and their turnover, it is not possible to have the direct or electronic contact data of all these professionals. The prescriptions also do not present the direct contact data of the professional nutritionist, making it necessary to call the nutrition sector of the hospital, in order to talk to the prescriber, who can often be busy or may not be in the work scale that day. So, despite the attempts, it becomes complicated to contact the nutritionist who performed the dietary prescription in the hospital.

Faced with the increased demand for patients with special dietary needs and the efforts to attend them, despite the low budget, a Working Group was created to discuss the issue. The group is composed of nutritionists who work in hospitals and municipal health departments of the municipalities of Curitiba, Piraquara and Pinhais (both from the Metropolitan Region of Curitiba) and members of the Regional Nutrition Council of the 8th Region. The objective is to promote dialogue among nutritionists working in the area, consolidating it as a discussion tool on nutritional care in enteral therapy and support to municipal initiatives to strengthen this network.

Conclusions

The Municipal Protocol of Special Diets, with the use of semi-handmade formulas, strengthened the care network for those with nutritional needs. Previously, patients received industrialized formulas to meet 50% of their nutritional needs. After the Protocol, patients receive nutritional follow-up at home, with semi-handmade enteral formula orientations.

Formulas are prepared from a mixture of staple foods - flour, milk, potatoes and sugar - with industrialized diets, which are provided by the municipality. Patients in clinical situations that contraindicate semi-handmade diets receive 100% of their needs in industrialized formulations.

The implementation of the Protocol reduced municipal expenses regarding the purchase of industrialized formulations, which allowed the reallocation of resources to hire more nutritionists for the Primary Care network.

This work is expected to stimulate more municipalities to share the experience of structuring their networks of attention to people with special needs. The institutionalization of these processes strengthens the SUS, guarantees users' rights and goes against the health judicialization movement.

Contributors

Sousa LRM worked on all steps, from the design of the study to the final review of the article. Will KL participated in the design of the study and its final version.

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