



## REVISIONES

### Social representations created by the media on childhood diabetes

Representações sociais elaborada pela mídia sobre diabetes infantil

Representaciones sociales de los medios de comunicación acerca de la diabetes infantil

Antonio Dean Barbosa Marques <sup>1</sup>  
Célia Maria de Freitas <sup>2</sup>  
Dafne Paiva Rodrigues <sup>2</sup>  
Maria Lúcia Duarte Pereira <sup>2</sup>  
Thereza Maria Magalhães Moreira <sup>2</sup>

<sup>1</sup> PhD student at the Graduate Program in Clinical Care in Nursing and Health, State University of Ceará. Fellow of the Coordination for the Improvement of Higher Education Personnel. Fortaleza, Ceará, Brazil.

<sup>2</sup> PhD in Nursing. Adjunct Professor of the State University of Ceará. Fortaleza, Ceará, Brazil

E-mail: [antonio-dean@hotmail.com](mailto:antonio-dean@hotmail.com)

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#### ABSTRACT:

**Objective:** To understand the social representations produced by the media about childhood diabetes.

**Method:** Study of social representations with documental basis. The search for news was carried out in two newspapers from Ceará - Diário do Nordeste and O Povo - and in two printed magazines: Veja and IstoÉ.

**Results:** 19 news items were identified. The textual content resulting from the news was processed and analyzed through the IRAMUTEQ software. Descending Hierarchical Classification (DHC) divided the set of journalistic contents into six classes, named according to their content.

**Conclusion:** The media uses different approaches to represent the same social phenomenon, affecting the way of production and/or modification of how society confronts the phenomena of daily life and the way it interprets them.

**Keywords:** Psychology social; Communications media; Diabetes mellitus; Child health.

#### RESUMO:

**Objetivo:** Aprender as representações sociais produzidas pela mídia sobre o diabetes infantil.

**Método:** Estudo de representações sociais com base documental. A busca por matérias foi realizada em dois jornais cearenses: Jornal Diário do Nordeste e Jornal O Povo, e em duas revistas impressas: Veja e IstoÉ.

**Resultados:** Foram identificadas 19 matérias jornalísticas. O conteúdo textual decorrente das reportagens jornalísticas foi processado e analisado por meio do *software* IRAMUTEQ. A Classificação

Hierárquica Descendentemente (CHD) dividiu o conjunto de conteúdos das matérias jornalísticas em seis classes, nomeados conforme seu conteúdo.

**Conclusão:** A mídia faz uso de diferentes abordagens ao representarem o mesmo fenômeno social, repercutindo no modo de produção e/ou modificação de como a sociedade confronta os fenômenos do cotidiano e a forma como os interpreta.

**Palavras-chave:** Psicologia social; Meios de comunicação; Diabetes mellitus; Saúde da criança

## RESUMEN:

**Objetivo:** Identificar las representaciones sociales producidas por los medios de comunicación acerca de la diabetes infantil.

**Método:** Estudio de las representaciones sociales con base documental. La búsqueda de materiales se llevó a cabo en dos periódicos cearenses: Diário do Nordeste y el diario O Povo, y en dos revistas impresas: Veja e IstoÉ.

**Resultados:** Se identificaron 19 artículos periodísticos. El contenido textual procedente de los reportajes periodísticos fue procesado y analizado por el software IRAMUTEQ. La clasificación Jerárquica Descendente (CJD) dividió el conjunto de contenidos de las noticias en seis clases, nombrados según su contenido.

**Conclusión:** Los medios de comunicación hacen uso de diferentes enfoques para representar el mismo fenómeno social, lo que repercute en el modo de producción y / o modificación de cómo la sociedad se enfrenta a los fenómenos cotidianos y la forma cómo los interpreta.

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**Palabras clave:** Psicología social; Medios de comunicación; Diabetes mellitus; Salud del niño.

## INTRODUCTION

Diabetes is one of the greatest global health emergencies of the 21st century. New cases of diabetes are detected every year, requiring a change in lifestyle and prevention of complications. Globally, more than 415 million adults live with the disease today and 642 million are expected to be affected by 2040. Brazil ranks 4th among the countries with the highest prevalence of diabetes in adults, and 5th in expenses with health services for the 14.3 million people who live with the disease<sup>(1)</sup>.

There are approximately 86,000 children under the age of 15 with type 1 diabetes (DM1) in the world. It is estimated that 70,000 new cases are diagnosed every year, with an increase of 3% per year in the number of cases. Brazil is among the 10 countries with the highest number of children with DM1, ranking 3rd in the list. Most children with DM1 need continuous use of insulin throughout life. Type 2 diabetes (DM2) can also occur in children, especially adolescents. Rarer types may also occur, mainly in newborns<sup>(1,2)</sup>.

Living with diabetes implies profound changes in the way of life of children and families. These patients require a network of support and specific care from health professionals and from the family, which should be included as early as possible in the treatment so that they may monitor and encourage children to keep cautious<sup>(3)</sup>.

There is an urgent need to stimulate discussion with the community and to enable it to take action. This is necessary for broadening the scope on the perception of any type of disease, with the purpose of promoting the circulation and appropriation of health information. It is necessary to debate and learn what type of health information is available to the population (political or epidemiological). Thus, studies on social representations in the media contribute to the field of health by providing a central point guided by the quality and uniqueness of the information provided in daily newspapers, a documentary source that is preferred by Brazilian families<sup>(4)</sup>.

The media plays an important role in the construction of social representations of the population<sup>(5,6)</sup>, in the formation of the collective imaginary by generating symbolic images and interceding in the relationship between readers and reality. Media texts weave threads that build identities, assimilating senses and representations present in the day to day, deeply influencing many aspects of everyday life<sup>(4-7)</sup>. Moreover, in the case of the study of the media in the context of social representations, there is an intrinsic need to recognize the communicational processes, together with the configuration of contents emitted and received<sup>(8)</sup>.

Moscovici<sup>(9)</sup> elucidates three systems of communication that guide the representations: diffusion, propagation and propaganda. Diffusion refers to the diversification of the public, being the essence of the news built on the response of the public. Any news is intended to inform the reader with a neutral position before the subject informed. Propagation, in turn, leans toward specific groups with crystallized ideologies. The messages fit the objects, behaviors, norms, to an existing social thought. With regard to propaganda, idealizations are established and conceived, admitting the informant to take a position before the subject in question.

Based on this context, exploring the theme of childhood diabetes in the light of the Theory of Social Representations (TRS) allows us to understand the influence of the media in the formation and construction of the way of thinking and acting of the population, and its implications for control and prevention policies.

The high prevalence, incidence and morbimortality of DM1 arouses the attention of health agencies and local and national media. This is an important phenomenon to be investigated with the theoretical contribution of social representations, to identify the attributed meanings. Therefore, it is relevant to know these representations from the point of view of local and national media.

In light of the above, this study aimed to understand the social representations produced by the media about childhood diabetes.

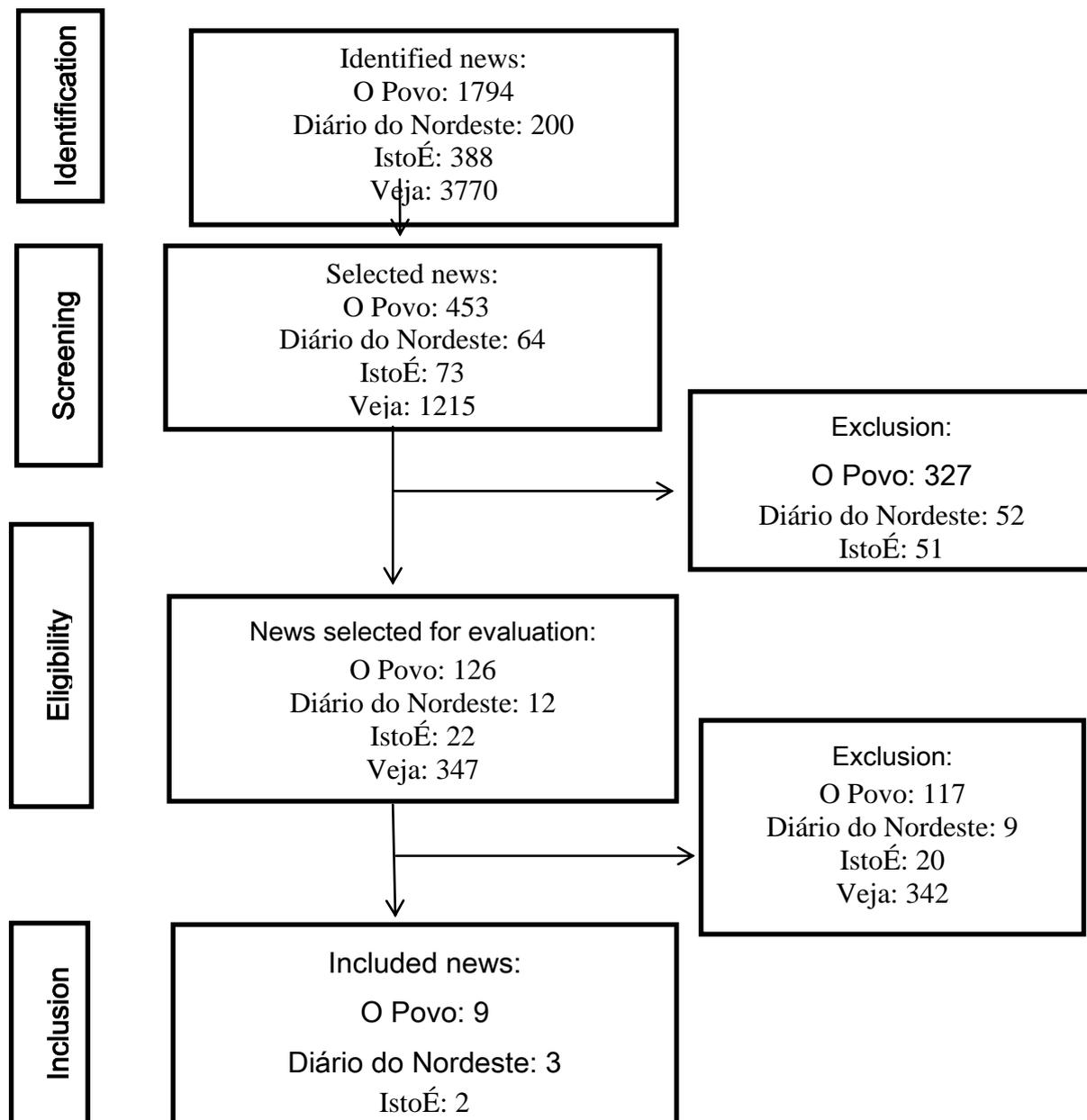
## METHOD

This is a study of documentary social representations. It consists of techniques and methods suitable for the identification, interpretation and analysis of printed and/or digital documents<sup>(10)</sup>.

The search for materials was carried out in two printed newspapers that have the largest circulation in Ceará State, *Jornal Diário do Nordeste* and *Jornal O Povo*, and two printed magazines, *Veja* and *IstoÉ*, with the largest circulation in the country. Both were researched online during July 2016.

For the term "diabetes" was used in the search, and no temporal delimitation was established. The PRISMA (*Preferred Reporting Items for Systematic reviews and Meta-Analyses*) checklist was used for selection of news. Initially, 6,152 news were found; 5,645 were excluded and 507 were elected during screening, and 19 were included in the study (Figure 1). Two filters were applied in order to select the news that satisfactorily met the study proposal: filter I consisted in reading the titles of the news, and filter II was based on the reading of the entire journalistic material during the eligibility phase.

**Figure 1-** Flowchart of selection of journalistic material based on PRISMA – Fortaleza-Ceará-Brazil, 2016.



The results composed the *corpus*, which was transcribed into the LibreOffice® software, submitted to refinement for deletion of vocabulary repetitions, and grouping of words by semantic similarity. The news included in the study were organized according to the identification code, title, year of publication and source of the news.

The textual content extracted from the journalistic material was processed and analyzed through the IRAMUTEQ software (*R Interface pour analyses Multidimensionnelles de Textes et de Questionnaires*) version 0.7 alpha 2, which, under a quantitative approach, provides contexts and classes with contents, based on the similarity of vocabularies<sup>(11)</sup>.

Among the possibilities of analysis carried out in the IRAMUTEQ, we chose the Descending Hierarchical Classification (DHC). In this modality, textual segments are classified on the basis of their respective vocabulary, and the set of them is distributed as a function of frequency of reduced forms. This analysis aims to obtain classes of textual segments which present similar vocabulary with each other and, at the same time, a different vocabulary from the text segments of other classes. From these matrix analyses, the *software* organizes the data in a DHC dendrogram that portrays the relationships between classes.

## RESULTS

The following are allusive results identified in newspapers and magazines. These are arranged in a table according to their identification code, title of the news, date of publication and place of publication (Table I).

**Table I: Characterization of the news included in the study according to their code, title, date of publication and source of publication, Fortaleza-Ceará, 2016.**

Code	Title	Date	Source
13	Students receive guidance on type 1 diabetes	29/10/2014	O Povo
14	Event brings together parents and children with diabetes	09/11/2013	O Povo
15	Quality of treatment of diabetes mellitus	29/07/2014	O Povo
16	Raising awareness about childhood diabetes in schools	05/08/2014	O Povo
17	Program for children with diabetes will be implemented in two schools in Fortaleza	05/08/2014	O Povo
18	Prevention begins with healthy eating in childhood	11/05/2012	O Povo
19	Talk on Type 1 diabetes guides parents of child affected by the disease	13/09/2011	O Povo
20	Violent games are harmless for most children, says study	09/06/2010	O Povo
21	Internet and video games make young people vulnerable to diabetes, alerts a physician	14/11/2010	O Povo
22	1 million children have diabetes in Brazil	12/11/2015	Diário do Nordeste
23	Obesity is linked to diabetes	13/11/2015	Diário do Nordeste
24	How to deal with diabetes in schools	27/12/2015	Diário do Nordeste
25	Type 2 diabetes threatens children	09/10/2015	IstoÉ
26	First artificial pancreas is implanted in 4-year-old boy to treat diabetes	22/01/2015	IstoÉ
27	Obesity and diabetes double the risk of having an autistic child	02/02/2016	Veja
28	Stress in childhood represents a three-fold higher risk of type 1 diabetes, says study	09/04/2015	Veja
29	Premature birth may raise risk of type 2 diabetes	11/02/2014	Veja

30	Children are also victims of diabetes type 2	14/11/2011	Veja
31	Feeding against the infant diabetes	02/05/2011	Veja

**Source:** data obtained in the newspapers O Povo and Diário do Nordeste, and in the magazines Isto É and Veja, 2016.

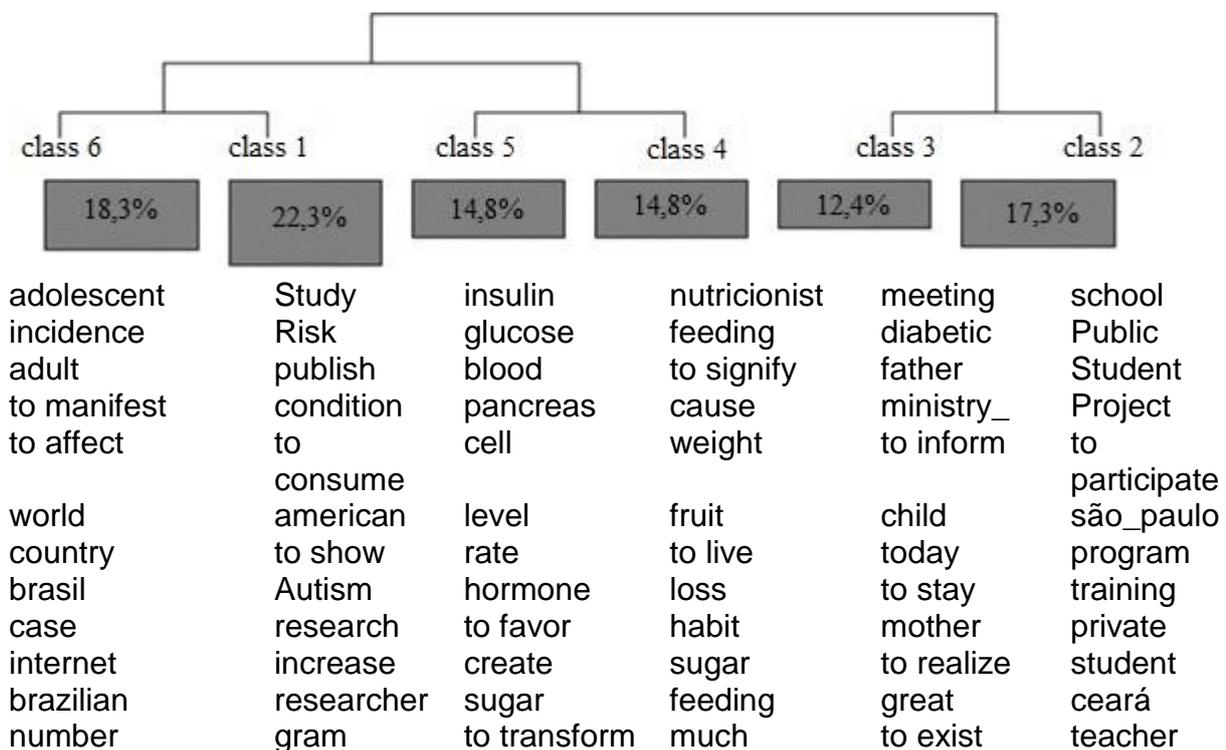
Of the 19 selected news, 12 (63.1%) had been published in newspapers<sup>(12-23)</sup>; nine (47.3%) had been published in the newspaper O povo<sup>(12-20)</sup> and three (15.7%) in the newspaper Diário do Nordeste<sup>(21-23)</sup>. The other news (36.8%) had been published in magazines<sup>(24-30)</sup>, two (10.5%) in the IstoÉ Magazine<sup>(24-25)</sup> and five (26.3%) in the Veja Magazine<sup>(26-30)</sup>.

Regarding the year of publication, news published from 2010 to 2016 were identified, with the majority (57.8%) published in the two (2014-2015) last years prior to the survey.

The publications of the newspapers focused on the dissemination of local events and guidelines for daily living with childhood diabetes<sup>(12-23)</sup>, while journals focused on scientific discoveries<sup>(24-30)</sup>. This differentiated emphasis of the news is explained by the target audience. In general, newspapers are intended for the general population, while the target reader of magazines are middle-class citizens, politicians and business people.

IRAMUTEQ divided the *corpus* into 202 initial text units (UCE's), 231 text segments, using 87.45% of it. The DHC carried out by the *software* resulted in a dendrogram of classes obtained from the *corpus*. The DHC divided the set of news into six classes, formed from the lexical and semantic similarity of the news. Each class was named according to its specific content. The construction of the dendrogram (Figure 2) illustrates the divisions made in the *corpus*, until obtention of the final classes.

**Figure 2: Thematic structure of the social representations of childhood diabetes according to the media. Fortaleza-Ceará-Brazil, 2016.**



last	drink	energy	really	difficulty	kids
videogame	traumatic	resistance	recommend	when	fortaleza
currently	probability	to cause	doctor	to tell	to practice
young	to develop	autoimmune	avoid	society_br	next
type_2_diabetes	author	responsible	need	coordinator	pilot_project

Source: IRAMUTEQ 0.7 alpha2 data processing.

### **Class 1: Studies on the risk of developing diabetes**

This class had 45 UCEs, corresponding to 22.3% of the *corpus* and was directly associated with class 6. The most frequent and significant terms of these text segments are: study, risk, publication and condition ( $p < 0.0001$ ), predominantly extracted from three articles<sup>(26-27)</sup> according to the order of significance.

### **Class 2: Schools as spaces for health promotion**

This class had 35 UCEs, corresponding to 17.3% of the *corpus* and was directly associated with class 3, containing the words: school, public, student, project, participate, São Paulo, program, training, private, student, Ceará, teacher and *kids*. These were the most frequent and significant of the text segments ( $p < 0.0001$ ), and were predominantly extracted from four news<sup>(12,15-16,23)</sup>, according to the order of significance.

### **Class 3: Class entities carry out meetings to inform parents about diabetes**

Class 3 presented 25 UCEs, with 12.4% of the *corpus*, and was directly associated to class 2. The most frequent terms with the highest level of significance ( $p < 0.0001$ ) were: meeting, diabetic, father, Ministry of Health, inform, child today, stay, mother, realize, great, exist, difficulty and when, originated from two news<sup>(13,15)</sup>.

### **Class 4: Changing eating habits for living with childhood diabetes**

Class 4 presented 30 UCEs with 14.8% of the *corpus*, and was affiliated with class 5. Nutritionist, food, meaning, cause, weight, fruit, live, loss, habit, sugar and food were the most frequent words with the higher level of significance ( $p < 0.0001$ )<sup>(17,20)</sup>.

### **Class 5: Use of insulin to control glycemic levels**

This class had 30 UCEs, corresponding to 14.8% of the *corpus*, and was directly associated to class 4. The most frequent and significant words of these texts segments were: insulin, glucose, blood, pancreas, cell, level, rate, hormone, favor, produce, sugar, transform, energy, resistance and cause ( $p < 0.0001$ ), and were predominantly extracted from three articles<sup>(18,25,28)</sup>, according to the order of significance.

### **Class 6: Higher incidence of adolescents with diabetes worldwide and in Brazil**

Class 6 presented 37 UCEs, corresponding to 18.3% of the *corpus*, and was directly associated with class 1. The most frequent and significant terms of these text segments were: adolescent, incidence, adult, manifest, affect, world, country, Brazil and case ( $p < 0.0001$ ), extracted predominantly from three articles<sup>(20,24,29)</sup>, according to the order of significance.

## DISCUSSION

US researchers report that children whose mothers were obese before the onset of gestation or who were living with diabetes before gestation or developed gestational diabetes were twice as likely to have an autistic child<sup>(26)</sup>.

Another study also conducted in the United States of America (USA) pointed out that premature births may increase the risk of developing DM2 as a result of premature newborns presenting twice the insulin level when compared to children born in due time<sup>(28)</sup>.

News in Sweden<sup>(27)</sup> begins with the following statement: "divorces, fights and stress in the family may trigger the disease", bringing the image of a downcast girl and a blurred background with the parents having an argument. Operating in a representational logic, the introductory message and the use of the image bring a strong emphasis and appeal to the social phenomenon of the role of the family on the genesis of the disease. As the reading continues, the study concludes that children who had suffered a "traumatic event" were three times more likely to develop the disease than children who had not experienced stressful situations. The article also presents the following excerpt "Stress should be treated as a potential risk factor (for the disease)". Here, this representation begins to be modified at the moment when representations correlated to stressors emerge, and not only to the family issue as the text says in the initial words with the aim of influencing the reader.

The understanding of social relationships is of fundamental importance to meet the complexity of the demand in the management of childhood diabetes. The social context of this management includes family members (parents, spouses), colleagues, loving partners and care professionals. Two theories linked to these questions are identified: the Interpersonal Theory and the Self-determination Theory, in which cordial and friendly interactions with family and friends are related to good diabetes outcomes, while conflicting interactions are related to poor outcomes.

Schools represent a favorable space for children and adolescents with diabetes to be *bullied* by colleagues, being often excluded from games or prevented from enrollment due to lack of knowledge about the disease<sup>(12,15,16,23)</sup>. In order to raise awareness in the school environment, the IDF created the *Kids and Diabetes in School*. In Brazil, only two states implemented the initiative: São Paulo and Fortaleza<sup>(15,16)</sup>. Teachers and children were trained to recognize early signs and symptoms of the disease, and educational and ludic materials, lectures, debates were promoted, among other actions<sup>(15)</sup>.

Ignorance generates stigma against children with diabetes, often leading to isolation and restriction of activities. Comments such as "Is diabetes contagious? But he sticks his finger all the time, he is like an addict!" are common<sup>(15)</sup>.

In order to clarify and resolve doubts and prejudices against children and adolescents with diabetes, the program *Kids* makes use of playful activities through storytelling where the life of Tomás is narrated, a child who plays, studies and practices sports. What makes Tomás different from the other children is that he has diabetes and need to take insulin. The story promotes one of the two processes that generate social representations, the objectification. Moscovici<sup>(9)</sup> writes that objectification adds to the thought of unfamiliarity with reality, legitimizing the essence of reality. Therefore,

objectification implies the concretization and naturalization of a social representation. Once the collectivity accepts the paradigm or figurative nucleus, it becomes increasingly easier to speak and understand everything that relates to it.

Much of the time of children is spent in the school environment. For this reason, establishing close communication and cooperation in the school environment is fundamental for good management of diabetes, safety and academic opportunities.

When a child has diabetes, the whole family falls ill and suffers together, as they need to change the whole routine of everyday life. Many mothers and fathers of children with DM1 miss information and do not know how they should act in the face of the situation<sup>(13)</sup>.

In this context, knowing the way social representations of parents of children with diabetes are generated allows us to identify, recreate and refine the scientific knowledge disseminated by the media and the information transmitted by health professionals, associating them with common sense, which is called anchorage<sup>(9)</sup>. The reality of anchoring and objectification mechanisms is modified when new knowledge is socially assimilated and shared in a group, making it familiar. Thus, the reality of being of the reified universe is left to become the reality of the consensual universe.

There are many sociocultural beliefs and values that permeate the diet and eating behavior of people with diabetes. "Eating too much sweets does not mean you're going to have diabetes"<sup>(17)</sup>. Nowadays, an exacerbated consumption of sugar-rich industrialized products (sweets, cookies, chocolates, soft drinks, hamburgers, pizzas, savoury snacks,...) has become increasingly common in society's lifestyle<sup>(30)</sup>.

For Moscovici<sup>(9)</sup>, the subject and the object are not congenitally distinct; there is a constant movement between the subject and the object, promoting an interaction in which they both modify each other. In this sense, it is understood that the dietary behavior of children (subject) with diabetes (object) is modified by the need to adapt to the new circumstance of life, leading to new representations.

The news of the first artificial pancreas implanted in a child in Australia generated heated discussion and great expectation in the social networks and scientific community in the year 2015. "The implanted artificial pancreas, resembling an MP3 player (physical appearance) [...] reproduces the biological function of the pancreas to predict low glucose levels and stop the administration of insulin"<sup>(15)</sup>. To better understand the new health technology resource, the news anchors the topic to the physical representation of an MP3 player, a popular multimedia resource. Anchoring mean "classifying and naming something. Things that have no name and are strange, nonexistent and even threatening"<sup>(9:61)</sup>. Placing the unknown object or strange person in a particular category (labeling) by assigning a known name to it is the first step in the process of social representation.

Type 1 diabetes mellitus is a chronic disease that requires lifelong treatment. This treatment requires daily insulin shots, lifestyle changes, adoption of healthy habits, and dietary restrictions that may hinder adherence to treatment. This is often diagnosed before children develop the skills needed to complete the complex tasks to manage diabetes independently, making it critical that parents and other adults get involved in it. Parents should quickly master and teach others about the care for DM1 of their

children, and constantly work to help the child achieve tight blood glucose control and avoid hypoglycemia.

The news warn about the increase of cases of DM2 in children and adolescents<sup>(20,24,29)</sup> as a result of the change in eating habits, with the incorporation of fast-food and caloric snacks to the daily life, and also the sedentary lifestyle related to technological advances (internet, video games, ...)<sup>(20)</sup>. Previously almost exclusively restricted to adults, DM2 nowadays progresses among young people, especially when associated with childhood obesity<sup>(24)</sup>. Fifty years ago, only 3% of all DM2 cases occurred in children and adolescents; at present, this percentage is 30%<sup>(29)</sup>.

Newsletters translate diabetes as an infantile-juvenile threat by means of reductionist explanations of the biomedical view, with emphasis on clinical and epidemiological aspects disseminated in the scientific community and discussed by health experts. Such informative elements come, therefore, from a reified universe. Moscovici tells us that the sciences generate representations to tell that "reified worlds increase with the proliferation of sciences"<sup>(9:60)</sup>. That is, the popularization of science promotes greater acceptance and incorporation of scientific principles into the human way of life.

The representation of childhood diabetes is anchored in the social value that is attributed to it. Thus, while the parents of children with DM and/or the children themselves have access to the information made available by the media, they construct knowledge about the conception of what the disease is and about the treatment for the care process.

## CONCLUSION

While newspapers focus on everyday aspects of childhood diabetes, magazines devote attention to scientific issues. These data reveal that the media makes use of different approaches when representing the same social phenomenon, through greater attention to certain aspects of the news and of the target readers, affecting the mode of producing and/or modifying how society confronts the phenomena in the daily life and the way how it interprets them, promoting new representations.

Therefore, these new social representations elaborated by the media consist in the adaptation of the representation to the transformations of the context through the integration of new elements or modification of others in function of the complexity of the phenomenon. Thus, social representations are considered as a means of (re)creating reality.

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