Maternal conceptions of infantile diarrhea

Katia V. de O. Feliciano,1 Maria Helena Kovacs2

Abstract

Objective: to understand maternal conceptions of infantile diarrhea, encouraging reflection on the importance of communication between mothers and health services.

Methods: survey carried out in selected areas of six towns in the state of Pernambuco, all of which participated in the diarrhea control project coordinated by the State Health Secretariat. The information was obtained through interviews with 770 mothers, producing a representative sample of 1,026 children younger than five years.

Results: in general, mothers associated the occurrence of diarrhea with some kinds of food (fatty or undercooked). Better educated mothers, regardless of their place of residence, attributed it to improper hygiene and sanitation, whereas illiterate and poorly educated mothers, from the metropolitan region of Recife, blamed it on hot weather, and those living in the countryside believe the occurrence of diarrhea is related to teething. Circa 24.2% (63.4% living in the countryside) do not know how to prevent the disease. The two preventive measures most frequently adopted consist in drinking treated water and cooking food thoroughly. Only 0.5% mentioned breast-feeding. The number of children still alive and their ages influence maternal conceptions. The main sources of information about the prevention of diarrhea are the support network (45.5%), the health sector (35.9%) and the media (33.2%).

Conclusions: the insufficient participation of the health sector in the information network about diarrhea, misinformation, and sharp disagreement over maternal conceptions and technical knowledge, which are the cornerstone of institutional measures, show that it is necessary to value the communicative dimension of the educational approach in child care.


Introduction

The ideas on diarrhea, which result from different experiences, knowledge, and views of the world, allow for distinct interpretations and claims regarding the disease.

1. Master of Science, Epidemiology, School of Medical Sciences, Universidade de Pernambuco.
2. Master of Science, Preventive Medicine; Associate Professor, Social Medicine Department, School of Medical Sciences, Universidade de Pernambuco.
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The ability to recognize and assess episodes of diarrhea and to make decisions related to the prevention and treatment of the disease reflect - within the web of relations in which mothers, informal networks, and healthcare workers are inserted - the different ways of understanding and acting on the problem. In this sense, there is no single perspective at the basis of the perceptions of health; these perceptions are continuously being transformed and are dependent on the subjects who express them.1
We carried out a multi-stage sampling in two steps. In the first step, based on a list obtained from the population censuses, the areas were selected using the random number table. In the second step, we selected, within each area, the block and, subsequently, the corner of the block. Next, we visited all houses in sequence by facing the house on the selected corner and moving leftwards until a total of eight houses had been visited.

Our field study was carried out between February 26th and April 2nd, 1996 with a representative population sample of 1,026 children aged less than five years and residing in the areas selected for the intervention. These areas were divided into two strata: metropolitan and rural areas. The population sample size was calculated for each stratum according to an alpha of 95.0%, error of 5.0%, and an estimate of 90.0% of participation. We adopted a correction factor of two to adjust our population sample since it was obtained by clustered, and not simple, random sampling.

The calculations of population samples from residences in the rural and metropolitan areas were carried out independently. In each stratum, the population samples were calculated proportionally to the two different areas.

We carried out a population survey in order to describe maternal perceptions and practices concerning diarrhea in six different cities of the state of Pernambuco, northeastern Brazil. The cities were implementing measures to control diarrhea under the coordination of the state health department. Moreover, the cities presented differences in terms of accessibility to healthcare services, of child mortality rates, and of diarrhea. The areas of intervention included in the control measures were established according to different criteria, such as poor sanitation and high prevalences of diarrhea, for the cities in the rural (countryside) area (Agrestina, Brejo da Madre de Deus, and Araripina) and organization characteristics of the healthcare services, for the cities in the metropolitan area (Recife, Olinda).

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Epidemiological surveys have reported that beliefs, attitudes, and practices related to health affect the prevalence and development of cases of diarrhea. Ethnographic studies carried out in Latin-American countries and in other continents have described the practical notions of diarrhea: the characteristics of symptoms; the consequences of the disease; and the assessment of severity that is at the basis of the choice of different treatments. Considering all different vantage points, which are at times converse, there are several controversial matters that emerge from the confrontation of technical and practical notions of the disease.

Studies have reported that different cultures describe uncooked foods, fatty foods, poor quality of the mother’s milk, teething, poor hygiene, poor sanitation, and heat as causes of diarrhea. In northeastern Brazil, there are beliefs that the disease is also a result of evil eye, of scare, and of possession by evil spirits. As a result of these perceptions, the mothers of children with diarrhea seek the available traditional and technical resources. In this sense, in cases of diarrhea attributed to evil eye and possession, it is common for people to seek the help of faith healers. In turn, the episodes associated with teething, perceived as normal during the development of children, are not reported as a reason for concern.

The maternal perception of diarrhea is certainly closely related with the frequency of episodes and, in cases of diarrhea due to infectious reasons, with the intensity of the transmission. In addition, most of the complications, the sequelae, and the lethality caused by diarrhea are a consequence of common practices in the treatment of the disease, such as the suspension of the usual diet, the poor supply of oral rehydration salts, the increase in intake of other fluids, and the use of medication without professional orientation.

The decrease in the vulnerability of children presupposes the search for an improved understanding of the practices most commonly used by mothers and the pertinent social environment. Considering this vantage point, the communicative dimension of educational programs becomes very important. These programs should be aimed at a better communication with the mothers by improving group activities and at changing individual care, including medical appointments, into an opportunity to clarify questions and formulate educated opinions about health and the most common diseases. This approach might allow for an increased participation of healthcare services in the maternal decisions related to diarrhea.

Studies assessing the treatment of diarrhea in the states of Pernambuco, Brazil, and in northeastern Brazil showed that the healthcare service units of the region scarcely provide information about diarrhea. The educational practice, similarly to that of healthcare community agents, helps to minimize the exchange of experiences and perceptions. Studies carried out at services implementing measures for the control of diarrhea indicated that only 66.0% of mothers of children aged less than five years, and who were waiting for a medical appointment, were aware of at least one piece of correct information about the disease (usually about personal hygiene). After the appointment, half of the mothers of children with diarrhea reported not being aware of the signs of dehydration.

In a context of considerable disregard of an educational approach, it is our objective to describe the profile of maternal perceptions of occurrence and prevention of childhood diarrhea and, based on the results, to assess some of the aspects related to the communication between mothers and healthcare professionals. It is very important that our study be understood as a preliminary approach to a complex problem that will still require further, more detailed studies.

Methods

We carried out a population survey in order to describe maternal perceptions and practices concerning diarrhea in six different cities of the state of Pernambuco, northeastern Brazil. The cities were implementing measures to control diarrhea under the coordination of the state health department. Moreover, the cities presented differences in terms of accessibility to healthcare services, of child mortality rates, and of diarrhea. The areas of intervention included in the control measures were established according to different criteria, such as poor sanitation and high prevalences of diarrhea, for the cities in the rural (countryside) area (Agrestina, Brejo da Madre de Deus, and Araripina) and organization characteristics of the healthcare services, for the cities in the metropolitan area (Recife, Olinda).

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were not able to interview a total of eight houses with children aged less than five on the one side of the street, we crossed to the other side and visited homes following the same criteria.

If more than one mother of a child aged less than five years was living in the home visited, only one mother was interviewed. The first criterion for selection of one of the mothers was interviewing that whose child presented diarrhea at the time of the interview, or in the past fifteen days. The second criterion was interviewing the mother of the youngest child. A total of 770 mothers participated in the study. We defined diarrhea as increased number of bowel movements and decreased consistency of feces, with possible alterations in odor or presence of mucus or blood.

Data were collected using a standardized questionnaire with open-ended and semi-open-ended questions whose answers were recorded as formulated. We inquired into the social and demographic characteristics of the mother, into the maternal knowledge of diarrhea, and into the use of healthcare services by the child. The field study team included a supervisor (social worker) and 20 interviewers (healthcare community agents) who were trained to understand the role of the field interviewer, the situation of the interview, and the questions.

After review and organization of the information, we assessed the relationships between maternal knowledge of causes and prevention of diarrhea with the use of healthcare services for the child, the child’s age, the number of children alive, schooling, and sources of information about the disease. Comparison of the population sample of mothers in relation to residence was carried out using the chi-squared test. Chi-square trend analysis identified an influence of schooling on knowledge. We carried out discussions aimed at stimulating the understanding of the importance of the communication between mothers and healthcare services.

Results

The age range of mothers was 20 to 34 years, with similar medians in the metropolitan (26 years) and rural (27 years) areas. In the metropolitan area, the median for formal education (schooling) was 7 years and 38.8% of literate mothers had finished, at least, the eight grade (last year of junior high school in Brazil). In the rural area, the median for formal education was 3 years; there was a proportion 3.5-fold higher of mothers who had never studied, and 57.3% of literate mothers had finished, at maximum, the fourth grade. In the metropolitan area, mothers usually had one child, and in the rural area, three or more (Table 1).

A total of 96.2% of mothers claimed knowledge of childhood diarrhea (98.8% in the metropolitan area, and 93.2% in the rural area); this factor was not influenced by the lack of previous contact of the child with healthcare services. However, it was related to the reason for seeking assistance. There was a five-fold higher prevalence of uninformed mothers among those whose children were taken to healthcare services only in situations of disease (9.1%) in comparison to others (1.8%).

Maternal schooling, independently of where the mothers resided, did not influence knowledge of causes of diarrhea (chi-square trend = 2.649; P=0.104). In turn, the prevalence of mothers who reported knowing the causes of diarrhea varied according to residence and formal education. In the metropolitan area, the perceptions of causes of diarrhea were more commonly associated with uncooked foods, contaminated water, and fatty foods (mothers with five years of schooling or more); and with uncooked foods, fatty foods, and heat (illiterates or with one to four years of schooling). In the rural area, they were more commonly associated with uncooked foods, contaminated water, teething, and uncooked foods (mothers with higher schooling); and with teething, uncooked foods, and contaminated water (illiterates and with lower schooling) (Figure 1).

The perceptions relating foods to diarrhea, which represent widely spread ideas, were observed in a proportion 2.3 times higher in the metropolitan area. The importance given to uncooked foods was more generalized, whereas that given to fatty foods was more specific, especially in the metropolitan area. Teething was mentioned 1.8 times more often in the rural area, especially by mothers who were illiterate and with up to four years of schooling; in turn, in the metropolitan area teething was more often referred by

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**Table 1** - Some sociodemographic characteristics about the mother, according to the place of residence, State of Pernambuco, Brazil, 1996

<table>
<thead>
<tr>
<th>Sociodemographic characteristics</th>
<th>Metropolitan area (n = 418)</th>
<th>Rural area (n = 352)</th>
<th>Total (n = 770)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 - 19</td>
<td>33</td>
<td>26</td>
<td>59</td>
</tr>
<tr>
<td>20 - 34</td>
<td>306</td>
<td>250</td>
<td>556</td>
</tr>
<tr>
<td>35 and +</td>
<td>79</td>
<td>76</td>
<td>155</td>
</tr>
<tr>
<td><strong>Schooling (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>42</td>
<td>125</td>
<td>167</td>
</tr>
<tr>
<td>1 - 4</td>
<td>74</td>
<td>130</td>
<td>204</td>
</tr>
<tr>
<td>5 - 8</td>
<td>156</td>
<td>57</td>
<td>213</td>
</tr>
<tr>
<td>9 and +</td>
<td>146</td>
<td>40</td>
<td>186</td>
</tr>
<tr>
<td><strong>Number of live children</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>177</td>
<td>96</td>
<td>273</td>
</tr>
<tr>
<td>2</td>
<td>135</td>
<td>88</td>
<td>223</td>
</tr>
<tr>
<td>3 and +</td>
<td>105</td>
<td>168</td>
<td>273</td>
</tr>
</tbody>
</table>
mothers who had studied for five years or more. Only one mother referred early weaning and two the lack of water in the home and evil eye as the causes of diarrhea.

Approximately 24.2% of mothers interviewed (63.4% from rural areas) were not aware of measures of diarrhea prevention; out of which 90.9% reported their perceptions on occurrence of the disease. The absence or presence of this awareness determined a different pattern of perceptions. Independently of the area in which mothers resided, those who were not aware of preventive measures - usually illiterate or with up to four years of schooling - underestimated the possibility of infection and/or infestation due to poor hygiene or sanitation. Also, especially in the rural area, mothers emphasized teething as the cause of diarrhea (Figure 2). Lack of information on prevention of diarrhea was higher among mothers whose children were taken to healthcare services only in cases of illness (23.2% in the metropolitan area, and 40.6% in the rural area) in comparison to others (14.9%, metropolitan and 28.8%, rural).

Figure 1 - Maternal conceptions of the causes of diarrhea, according to school grade and place of residence, State of Pernambuco, Brazil, 1996
The access to information on prevention of diarrhea was higher in the metropolitan area (83.7%) in comparison to the rural area (66.5%); and among mothers with higher schooling (chi-squared trend = 31.865; P = 0.000). The most commonly referred control measures were, independently of the area, using treated water and well-cooked foods. In the metropolitan area, both of these control measures were related with higher maternal schooling. Hygiene measures were common among mothers who had studied for five years or more. The restriction of fatty foods intake was 3.3-fold higher in the metropolitan area (41.3%) in comparison to the rural area (12.6%); in the rural area, this measure is more prevalent among illiterate mothers and those with up to four years of schooling (Figure 3). Only 0.5% of mothers referred breastfeeding as a protective measure.

In the metropolitan area, less importance was given to well-cooked foods in cases of only children aged less than one year (30.6%), in comparison to others (54.4%). Independently of the number of children, mothers reported well-cooked foods (46.9%) and washing foods and cooking utensils (40.2%) as a major concern in cases of children aged one to four years. Washing the hands and clipping the nails (34.0%) were reported more often by mothers of children aged less than one year. In the rural area, little importance was given to placing dirty hands and objects in the mouth (4.9%) and to intake of fatty foods (4.9%) by mothers of only children aged less than one year, in comparison to others (23.0% and 14.3%). Independently of the age of children, washing foods and cooking utensils was considered more important in cases of only children (47.5%) in comparison to others (33.5%).

The main sources of information regarding the prevention of diarrhea according to mothers in the metropolitan area were relatives, doctors, and the television. In turn, in the rural area, they were friends and neighbors, relatives, television, and doctors. Personal experience was more important in the metropolitan area, and the radio and healthcare community agents in the rural area (Table 2). In the metropolitan area, 32.0% of mothers (48.3% of illiterates and 30.5% of literates) mentioned the social network (basically relatives) or the healthcare services (basically doctors; 27.6% of illiterates and 14.9% of literates, respectively) as the sole source of information. A total of
30.3% of mothers received information from different sources (3.4% of illiterates and 32.7% of literates); half of these mothers received their information from healthcare services (66.0% when combining with information from the media).

In the rural area, 23.7% of mothers mentioned the social network (relatives, friends, and neighbors; 28.7% of illiterates, 20.8% of literates) or the healthcare services (basically doctors, but also healthcare community agents; 18.7% of illiterates, 18.2% of literates) as the sole source of information. A total of 42.7% of mothers received information from different sources (31.2% of illiterates and 48.7% of literates); 54.0% of these mothers received their information from healthcare services (66.0% when combining with information from the media).

Consequently, 35.9% of the mothers interviewed (32.3% in the metropolitan area and 41.4% in the rural area) received information on the prevention of diarrhea from...
Table 2 - Maternal sources of information on the prevention measures against diarrhea in children, according to the place of residence, State of Pernambuco, Brazil, 1996

<table>
<thead>
<tr>
<th>Sources of information</th>
<th>Metropolitan region (n = 350)</th>
<th>Rural area (n = 232)</th>
<th>Total (n = 582)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Doctor</td>
<td>91</td>
<td>26.0</td>
<td>46</td>
</tr>
<tr>
<td>Lectures, posters at health centers</td>
<td>32</td>
<td>9.1</td>
<td>30</td>
</tr>
<tr>
<td>Community health agent</td>
<td>9</td>
<td>2.6</td>
<td>33</td>
</tr>
<tr>
<td>Friends, neighbors</td>
<td>19</td>
<td>5.4</td>
<td>70</td>
</tr>
<tr>
<td>Family</td>
<td>138</td>
<td>39.4</td>
<td>56</td>
</tr>
<tr>
<td>Radio</td>
<td>26</td>
<td>7.4</td>
<td>43</td>
</tr>
<tr>
<td>TV</td>
<td>84</td>
<td>24.0</td>
<td>56</td>
</tr>
<tr>
<td>Personal experience</td>
<td>61</td>
<td>17.4</td>
<td>24</td>
</tr>
</tbody>
</table>

healthcare services, either exclusively or combined with other sources.

Figure 4 shows that, with the exception of mothers in the rural area (who acquired their knowledge based on personal experience), intake of treated water is the protective measure reported more often by the interviewees independently of the sources of information. Washing foods and cooking utensils was commonly referred by mothers informed exclusively by the media. This association between hygiene practices and the media is marked in the metropolitan area considering the importance given to washing the hands and clipping the nails. In the metropolitan area, a greater proportion of mothers whose only sources of information are the social network and/or their personal experience reported restriction of fatty foods as a protective measure.

Discussion

The differences in importance attributed to the causes of childhood diarrhea reflect the priorities of different models, according to maternal schooling and residence. In this sense, the prevalent models of cause of diarrhea in the metropolitan area were related to foods and hot weather (illiterate and lower schooling); and to foods and possible infection and/or infestation due to poor hygiene or sanitation (higher schooling). In the rural area, they were related to physical development of children and possible infection and/or infestation due to poor hygiene or sanitation (higher schooling). This general profile, excluding the variations in prevalence, is in agreement with those reported in other countries.

With the exception of scarce references to scare, evil eye, and possession (which is actually surprising considering that 51.2% of children with diarrhea on the day of the interview or in the previous two weeks had been taken to faith healers) at least two of the most common models reported by mothers in our study (diarrhea associated with teething and with intake of fatty foods) diverge from a technical perspective. The differences in understanding and assessment of diarrhea are striking considering the multiple ideas about health and the disease reported by the population and of services.

An important finding was that 24.2% of mothers who reported some form of diarrhea did not know how to prevent it. When they did know how to prevent the disease, the association of intake of treated water and hygiene with prevention was more common than the association of intake of contaminated water and placing dirty hands and objects in the mouth with the episodes of diarrhea. These findings corroborate the impression that there is not always a continuous pattern from the maternal perceptions on causes of diarrhea to the needs that have to be met to protect children.

The notions related to occurrence and prevention of diarrhea can also change according to the needs of each child and the personal experience and knowledge of mothers in rearing their children. In general, more importance is given to foods and personal hygiene when children were aged one to four years, while personal hygiene is more important in cases of children aged less than one year. However, it is extremely concerning that almost none of the mothers referred the importance of breastfeeding as a protective factor against diarrhea, including mothers of children aged up to six months.

The social network is recognized as an important system of support in the mediation of cultural norms, in the attribution of meanings to incidents, and in the choice of measures. In our study, the social network represented the most important source of information on prevention of diarrhea, especially in the case of illiterate mothers. The differences in infrastructure were striking in the comparison of rural and metropolitan areas. It is possible that due to the characteristics of social interaction in great urban centers, families maintain a certain distance from their neighbors; in this sense, the institutions and the relatives become more active participants in the matters pertaining to the health-disease process.

The scarce presence of the healthcare services within the network of information on diarrhea (35.9% of mothers out of the 97.1% whose children used the services) and the unimportant reference to educational programs at home, especially in the metropolitan area (mothers made more frequent reference to the doctor, indicating decreased participation of healthcare community agents) expose the
vulnerability of programmatic measures. The assessment carried out at the services attending the areas studied showed the low prevalence, and the prescriptive characteristics, of the educational practices.

The importance attributed to the forms of prevention of the disease varied according to the sources of information. The most important preventive measure reported by mothers whose knowledge comes from the social network and personal experiences was paying attention to the foods. Also, especially in the metropolitan area, there was a special emphasis given to the hygiene measures and to those reported by the media (33.2%). Yet, the opinions of mothers whose sole source of information were the healthcare services and of those who had other sources were similar.
This similarity is interwoven by the perceptions that correspond or not to the technical knowledge on the matter. It is possible that information provided by healthcare agents were transformed by perceptions and values of informal networks. To be sure, the greater the sharing of perceptions among the participants of these informal networks, the greater the possibility of a mutual influence exerted by the subjects.

Finally, we underscore the striking distance between the practical perceptions of mothers and the technical understanding on matters of causes and prevention of diarrhea.10-12 The disagreement between maternal ideas and programmatic precepts indicates that it is necessary for healthcare professionals to adopt a communicative approach and build strategies for the prevention of diarrhea through a cooperative process of learning.

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References


Correspondence:

Dra. Katia V. de O. Feliciano
Rua Arnóbio Marques, 310 - Santo Amaro
CEP 50100-130 - Recife, PE, Brazil
Phone: + 55 81 3423.6851 – Fax: + 55 81 3423.3371
E-mail: cpg@fcm.ipebr