

Section 4.5.

Childhood Diarrhoea in Rural Nicaragua: Beliefs and Traditional Health Practices

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Abstract

In Nicaragua, the principal cause of infant mortality is diarrhoea, which is responsible of 40% of these deaths annually. This statistic reflects the low usage of health services and of oral rehydration therapy (ORT). Several studies were carried out in the Villa Carlos Fonseca municipality with the aim of creating programmes to improve this situation. This report describes two of those studies: one is ethnographic in character and was carried out in 1989, and the other epidemiological and was carried out in 1990. Both have as their aim, the gathering of information on traditional health beliefs and practices and their influence on the way in which mothers responded to their children's diarrhoeal illness. The ethnographic study involved interviewing 70 mothers with an average age of 28 years who had children under two years of age. The children represented two groups: one which was at a high risk of contracting diarrhoea and one which was at a low risk. The objectives included obtaining knowledge on the traditional taxonomy of diarrhoea, the perception of risk and the types of treatment being used. In the epidemiological study, 392 mothers of over 14 years of age participated, each with one or more children under the age of five, 216 of whom had diarrhoea in the two weeks preceding the survey. The objectives were to describe local health beliefs and practices and to determine the incidence of the types of diarrhoea according to the diagnoses made by the mothers.

At least 12 types of diarrhoea were identified, for which terms with names such as "empacho" and "sol de vista" were used. In the majority of cases, the mothers had more confidence in folkloric treatments that they themselves or the traditional midwives or healers (curanderas) applied, than in the services provided by the health centres. This attitude limited their use of health services and of ORT, although it was observed that, in certain cases, mothers used traditional treatments in combination with those of western medicine. There was a direct correlation, though non-significant, between the level of formal education of the mothers and the frequency with which they visited the health center.

The authors suggest studying the effects of massage, herbal baths and other traditional treatments in order to evaluate their effectiveness and adapt them, to the extent possible, to "modern" medicine. Health services providers should become familiar with traditional nomenclature and beliefs in order to improve their communication with mothers, and reorient harmful practices to obtain better results in programmes for the prevention of infant diarrhoea.

Introduction

Diarrhoea is one of the main causes of infant morbidity and mortality in developing countries¹. In order to reduce this problem, the World Health Organization (WHO) has selected the following areas for special consideration: improvements in child nutrition, especially through the promotion of breast feeding and better weaning practices; improvements in potable water availability and sanitation; personal and domestic hygiene; immunization against measles in order to prevent diarrhoea associated with this disease and the improvement of the anti-rotavirus vaccine which is still in the experimental stage².

Oral rehydration therapy (ORT), which consists of the administration of oral fluids - prepared with the appropriate homemade recipes; with commercially available oral rehydration salts; or

those distributed by the WHO - can not be substituted in the treatment of diarrhoea. The systematic use of this therapy in health centres and in the home will undoubtedly contribute to the reduction of the rate of mortality caused by diarrhoea³. In rural zones, and more particularly in those that are isolated, the knowledge of preventive measures and of proper treatment of infant diarrhoea in the home, especially with ORT, can mean the difference between life and death.

During the last decades, several ethnographic studies on diarrhoeal disease in children of various socio-cultural environments have been carried out⁴⁻¹⁵. These studies have led to the analysis of the relationship between popular beliefs about diarrhoea and the behavior of mothers when faced with this illness in their children, including their inclination to use ORT. The results indicate that a modification of traditional practices in the home is necessary, but also note the importance of taking into consideration folkloric beliefs in planning campaigns to promote ORT and preventive measures directed at mothers of small children. Furthermore, in several epidemiological studies it was noted that some of these beliefs, attitudes and health practices may, in fact, increase the risk of diarrhoea. It is essential to have in-depth knowledge of these factors and seek ways for modifying them through health education programmes and other pertinent interventions¹⁶⁻¹⁹.

In Nicaragua, where ORT began to be promoted in the mid 1970's and where its use increased as of 1979²⁰, a continuous decrease in the rate of infant mortality has been observed²¹. Nonetheless, the present annual rate of 56 deaths per 1000 live births is unacceptably high¹, mainly due to diarrhoea which causes 40% of these deaths²². Among the factors that could be related to this situation are: in case of diarrhoea not always the available health services are used; often these services are sought too late; and the use of ORT has not become generalized enough.

In societies with traditional cultures, mothers' decisions on the treatment of their children suffering from diarrhoea are influenced by folkloric beliefs and customs. Taking this factor into consideration, in 1986, in the rural municipality of Villa Carlos Fonseca, a research programme was implemented as a basis for elaborating community projects for the prevention and treatment of childhood diarrhoea. This programme was financed by the WHO Work Group on Diarrhoea and by The Leverhulme Trust of Great Britain, and executed in collaboration with the Nicaraguan Ministry of Health, the Nicaraguan Institute for Water and Sewage, the Nicaraguan University of Engineering and the Foundation for Social and Economic Development of Rural Areas (DESEAR) in Villa Carlos Fonseca²³⁻³⁰.

Through a first case-control study in 1986, in which 1402 families participated, risk factors directly related to the high incidence of childhood diarrhoea were identified. The most significant risk factors were low maternal education and low availability of water²³. Based on this information, a project was elaborated in order to educate mothers in the principles of hygiene and to develop rope pumps in order to obtain water from hand-dug wells. Since this time, the rope pump has become recognized as an appropriate technology and is presently being used in water and sanitation programmes in rural Nicaragua. This technology has been transferred to other developing countries such as Honduras and El Salvador²⁴⁻²⁶.

As a follow-up, in 1989, a prospective study was designed to clarify the relationship between mothers' hygiene practices and the incidence of diarrhoea in their children. A group of 172 mothers were selected randomly from the 1402 families who participated in the case-control study. The only criterion used in this selection was that mothers had children under the age of

two years: half of the mothers with a history of frequent diarrhoea in their children and the other half with a history of low diarrhoea incidence in their children²⁹. This study led to the identification of the most relevant of maternal practices related to diarrhoea and, based on these, permitted an improved design of the project for educating the population on hygiene principles. It was also decided to begin another project to introduce hand washing in schools.

This report presents the results of two other studies related to the previously mentioned investigations. The first, ethnographic in nature, was carried out in 1989 as part of the prospective investigation already described here, with the aim of obtaining information about traditional taxonomy, diagnoses and treatments for childhood diarrhoea used in the area. The second was an epidemiological survey carried out in 1990, with the aim of quantifying beliefs and treatment practices and determining the incidence of the types of diarrhoea, according to the traditional diagnosis made by mothers in the home.

Materials and methods

Local context

The municipality of Villa Carlos Fonseca, where the studies were carried out, is located 30 kilometers from Managua, on the Pacific coastal plains of Nicaragua. Its population is approximately 30,000, distributed among 38 communities. The local economy is dependent on agricultural production. Health resources available to the inhabitants of the municipality include one health center and six health posts, with six doctors, one dentist, one pharmacist, two nurses, 12 nurse's aids and a health educator. There are also 80 midwives who also work as traditional healers.

The ethnographic investigation

Ethnographic research was carried out from March to June of 1989, as part of the prospective investigation which complemented the case-control study of 1986. Of the 172 mothers in the prospective study, 70 were randomly selected from a list of names to participate in the ethnographic research.

The participants had an average age of 28 years: 24% of them had never attended school, 67% had attended primary school from 1 to 6 years and only 9% had attended, though not completed, secondary school.

A semi-structured interview was used to gather information. A guide was designed, based on literature related to the topic and information provided by people who had thorough knowledge of the conditions of the community, such as traditional midwives or healers, community leaders, and health and education personnel. A locally used taxonomy of the various types of diarrhoea was defined. In the semi-structured interviews, mothers were asked to verify the different types of diarrhoea as defined and it was sought to determine their knowledge and beliefs related to causes, symptoms and treatments depending on the types; their perception of risks; their use of health resources (official services or traditional midwife or healer); preventive practices and use of ORT.

The interviewers - a schoolteacher and a midwife, both mothers and residents of the municipality of Villa Carlos Fonseca - were fully trained by project personnel, emphasizing the need for objectivity toward folkloric beliefs. The two women had been interviewers in previous studies and had participated in the discussions related to the definition of the locally used taxonomy. Two students of Health Education from the University of Limburg (the Netherlands) observed the interviews as part of their study programme.

Data on age, education and socio-economic aspects of participants were taken from the prospective study, which has not yet been published completely²⁹, and therefore are not included in this report.

The epidemiological investigation

The epidemiological study was included in the survey on morbidity and mortality, applied to 500 homes in the municipality of Villa Carlos Fonseca. These homes were randomly selected, by choosing every tenth house of the 5.000 located in the 38 communities. This survey was carried out from June to August of 1990, which are the months of the highest incidence of diarrhoea during the year²³⁻³⁰.

Diarrhoea was defined as a period of one or more days, of three or more watery bowel movements. The interview for mothers with children under the age of five years included aspects related to the presence and type of diarrhoea, care of the child in the home, type of help sought and use of ORT. The interviews were carried out by four female residents of the municipality who had experience with previous studies and who were also trained by project personnel.

All women over the age of 14 years were interviewed and were asked the cause of death of any children who had died. If the death had been caused by diarrhoea, they were asked to identify the type of diarrhoea.

Results

The Ethnographic Study

At least 90% of the mothers were familiar with all of the types of diarrhoea according to the popular taxonomy, but only 77% knew about "bad stomach" and 74% about dysentery. In the following section an abstract is provided of the description made by the interviewed mothers with respect to each type of diarrhoea and the use of ORT.

Types of diarrhoea

The statistics presented here are descriptive. The base for percentages is always given for the group of women who recognized and could comment on the type of diarrhoea in question.

Empacho. Empacho occurs when food or beverage sticks onto the wall of the stomach and rots. It can present a danger to the child's life. It causes a watery and foul-smelling, white or yellow diarrhoea, and is associated with swelling and pain in the stomach. It may be accompanied by fever, vomiting and nausea, although some mothers explicitly mentioned absence of these symptoms.

According to 82% of the mothers, empacho should be treated with laxatives to clean the stomach and remove the material causing the diarrhoea. Among treatments used are a laxative oil taken with or without lemon juice, and milk of magnesia. Other treatments include “sobada”, a massage which is thought to unblock the stomach. A few mothers also mentioned ORT, antibiotics, herbs and antacids. Generally a mother or traditional midwife or healer was the appropriate person to treat empacho.

Infection. Infection is caused by a lack of hygiene. It is life-threatening and produces a watery, yellow or green diarrhoea, occasionally with mucous or blood. It is also accompanied by fever and vomiting.

In this case, 81% of the mothers mentioned treatment with antibiotics and 42% spoke of ORT. Almost all (96%) said that infection should be treated by a doctor.

Sol de vista (mal de ojo). This is caused by the child having eye contact with people who are in what is considered to be a hot state. As examples of such people; 59% of the mothers mentioned workers who had worked all day in the fields; 54% mentioned pregnant women; 49% people with a penetrating gaze; 46% drunks and people with hangovers; 17% menstruating women; and 7% young women. Sol de vista can be life threatening.

This diarrhoea is green, with mucus, and defecation is painful. The child has a high fever and headache, cries and has sad or ‘dirty’ eyes.

Treatment requires the presence, symbolic or real, of the person who caused the condition. For example, 53% recommended that the child be wrapped in the sweaty shirt of the person who caused the diarrhoea and 24% recommended that the child be held in the lap of this person. According to 39% of the mothers, this type of diarrhoea should be treated with alcohol or herb baths. Other suggestions included the application of father’s urine on the child’s head; the application of a mixture of saliva and breast milk; stomach massage; and a hair being wrapped around one of the child’s wrists. Only two women (3%) mentioned ORT and one recommended taking the child to a doctor.

Sol de cielo (pujo de sol). This “diarrhoea of the sun” is attributed to several causes: heat and exposure to the sun (92%), hot weather (11%) and heat in the home (11%). It is not considered dangerous. This diarrhoea is green and painful, with mucus and fever.

According to 72% of the mothers, treatment consists of baths with alcohol, herbs, wood and nut oils, or very cold water. Fruit drinks (frescos) were recommended by 17%. In general, the mothers themselves treat children with sol de cielo, though 20% preferred to take them to a traditional midwife or healer. Only one suggested seeing a doctor.

Diarrea de movimiento. This diarrhoea is considered part of normal development. It occurs when the child is teething (92%), starting to crawl (62%) or walk (89%). It is not considered dangerous and has no specific symptoms.

According to the majority (54%) of the mothers, this diarrhoea does not require any specific treatment, but 16% thought it was necessary to visit the health center. Some women mentioned

antibiotics (8%), fruit drinks (5%), ORT (3%) and rice water (3%).

Worms and parasites. These cause two types of diarrhoea and can be life-threatening. They are considered to be almost identical, except that they can be distinguished by their size. Worms are easily detected in the child's stool, but parasites are invisible. Bad hygiene is associated with diarrhoea caused by parasites, but seldom with that caused by worms. Worms become dangerous only when they are activated by a full moon, foods such as milk and sugar, and fever (worm fever), which causes the worms to leave the stomach and circulate through the body.

The stool contains a gritty element (chingaste) in its generally liquid composition. Common symptoms are fever, vomiting, and a painful stomach which may be swollen. The child's eyes may remain open while sleeping. The worms can cause itching of the nose, face or stomach, and grinding of the teeth. Mothers give children medication for parasites each time they present these symptoms.

The majority (92%) of the mothers mentioned mebendazole, piperazine, or metronidazole, but also herbs such as 'epazote' or wintergreen (20%) and garlic (10%), which cause worms that are circulating in the body to return to the stomach, where they can be expelled by medicines. Five women (8%) mentioned the use of ORT when parasites are detected, but none mentioned it for worms. In the case of worms, 62% considered a visit to the doctor necessary, and 93% considered this necessary for parasites.

According to 39%, self-treatment can also be used, especially for worms. The first step is to administer substances to calm or regroup the worms, then the patient is taken to the health center. Only two mothers (3%) mentioned the traditional midwife or healer.

Bad stomach. The cause of bad stomach is bad or badly prepared foods (51%), milk (23%), food in general (11%), or eating when angry (4%). It is not a danger to the child's life. The diarrhoea is watery, with stomach pains and sometimes accompanied by vomiting. Ten mothers insisted that it did not cause a fever, while seven stated that it did.

Half of the mothers suggested milk of magnesia, with or without lemon, or a laxative oil to treat this diarrhoea, 34% recommended other antacids. In 60% of the cases, the mother administered the treatment, although 34% mentioned a visit to the health center and two (4%) to the traditional midwife or healer.

Dysentery (desgaste). There was no consensus on the cause of this diarrhoea, but bad hygiene, factors related to food and beverage preparation and consumption were mentioned. Almost half of the mothers were unable to identify some cause. Dysentery is seen as an end-stage condition following a prolonged diarrhoea due to infection or sometimes empacho. It is seldom related to any other type of diarrhoea. It is the most dangerous type of diarrhoea and the less known. It is watery and bloody, and may be accompanied by mucus and sometimes by vomiting and fever.

Only 58% of the women recommended any type of treatment, and ORT was the most frequently (60%) mentioned. Some mentioned antibiotics, fruit drinks, and aluminum preparations, as well as baths. The great majority (90%) stated that the person most appropriate for treating dysentery was the doctor.

Fallen fontanelle. 90% believed that this condition could be caused by falls, meanwhile 6% mentioned the child's head falling back suddenly and 1.5 to 3% suggested the rapid removal of the bottle; blows to the head; violent coughing; being held in the wrong way; having received a blow while eating; or drinking from a bottle with a nipple that was too hard. Almost half (45%) thought that diarrhoea itself caused the fallen fontanelle and considered this condition to be fatal.

Treatments mentioned were pushing the roof of the mouth upwards with the thumb (79%); applying massage (44%); holding the baby upside down and hitting it on the bottom of its feet (38%); a bath with oil (5%); laxatives (2%); and giving herb infusions (2%). The massage used in this case is different from that which is used for empacho. It begins with the hands and feet and moves to the center of the body. It is believed that this practice lifts the fallen fontanelle, as it "closes the body". Of the mothers 91% recommended a visit to the traditional midwife or healer; 11% a visit to the health center; and 5% the administration of home remedies.

Attitudes towards oral rehydration therapy

Of the mothers who were interviewed, 88% said they thought oral rehydration therapy was an appropriate treatment for diarrhoea. Some of their reasons included that it cleaned out or refreshed the stomach (53%), that it eliminated dehydration (48%), or that it sustained the child (15%). On the other hand, some mothers indicated that it was not efficient because it did not do any good (6%), it did not stop the diarrhoea (5%), that it produced swelling (2%), or that all it did was rehydrate the child (2%).

When they did not have access to rehydration salts, 70% used substitutes. Of these, 81% used rice water (rice cooked in water, then strained and sweetened); 68% used lemon with sugar; 21% used home remedies (described by the mothers as a liter of water boiled together with sugar and salt) and 9% used fruit drinks.

As part of the analysis of the results, each mother was assigned a total of points rating them on a scale of "traditionalism" depending on their preference for "modern" treatments such as antibiotics, anti-parasite medication and ORT, or "traditional" treatments such as herbs, baths, fruit drinks and laxatives. They were also assigned a score according to the type of help they sought when their child became ill: "modern" when they mentioned the doctor and "traditional" when the treatment was applied by a traditional midwife or healer; by the mother herself; or by the person who had supposedly caused the condition. No correlation was found between the age and formal education, and the level of "traditionalism" of the women. Nevertheless, mothers with a higher level of schooling were those who had more favorable attitudes towards the use of ORT.

The Epidemiological Study

There were 3175 people living in the 500 homes that were interviewed (6.4 persons per family), of whom 799 were women over the age of 14. Of these, 391 had one or more children under the age of five years. In total, 599 children under five years of age were recorded in the 500 houses, 216 of whom had diarrhoea during the two weeks prior to the survey.

Table 1 represents the number of cases of diarrhoea which occurred during those 14 days and the health resources and remedies sought by mothers. The cases of diarrhoea are distributed

Table 1. Types of diarrhoea suffered by 216 children under the age of five, during the 14 days prior to the survey, and resources of health services and treatment sought by mothers. Epidemiological survey, municipality of Villa Carlos Fonseca, Nicaragua, 1990.

Type of diarrhoea	No. of cases	% of the total	Sources of treatment sought by the mother			Treatment used				
			Help*	Doctor	Healer	ORT	Antibiotics	Parasite Medication	Laxatives	Medicinal Plants
Parasites	45	21	21	18	3	1	4	20	1	6
Infection	36	17	17	17	...	6	18	4	1	3
Bad stomach	25	11	5	5	...	7	6	3	3	1
Empacho	18	8	5	3	2	4	7	2	2	...
Pujo	16	7	5	4	1	1	2	3	1	5
Hot stomach	12	5	4	3	1	2	1	1	1	2
Movimiento	11	5	5	5	...	1	3	2	...	1
Worms	10	5	1	1	...	4	1	1	2	1
Dysentery	7	3	5	4	1	3	1	2	...	2
Fallen fontanelle	2	1	2	1	1	...	1	...	1	...
Sol de vista	2	1	1	...	1	...	2	...	...	...
Sol de cielo	2	1	...	...	...	...	...	...	...	2
Other†	5	3	3	3	...	2	1	...	...	1
Did not know	25	12	7	6	1	5	...	4	1	2
Total	216	100	81	70	11	36	47	42	13	26

* The mother sought help from a health center or a traditional midwife or healer.

† Diarrhoeas caused by measles or which children had at birth.

ORT = oral rehydration therapy.

according to the ten types previously described, plus “pujo” and “hot stomach”, which were identified on completion of the ethnographic study.

“Pujo” was described as watery, green diarrhoea, occasionally with mucus. The child suffering from pujo has to exert much pressure in order to defecate. “Their ribs become hot”, but there is no fever. “Hot stomach”, on the other hand, is a green or yellow diarrhoea, without mucus, and with only the stomach area becoming hot. It is believed that both diarrhoeas are caused by heat: high temperatures; “a strong gaze”; or lack of cooling drinks. They can be cured with cool drinks and baths.

As indicated in table 1, in 81 cases (37%) of the 216 children who had diarrhoea, mothers sought help; 70 (32%) visited the health center and 11 (5%) consulted the traditional midwife or healer. Only 36 (17%) of mothers applied ORT. The use of ORT was directly related to the source of help sought by mothers. For example, 36% of mothers who visited the health center used ORT, while only 8% of those who did not seek help used it. None of the mothers who visited the traditional midwife or healer used ORT. With regard to other treatments, it must be mentioned that antibiotics and anti-parasite medication were used in a higher proportion than medicinal plants and laxatives.

The diarrhoeas considered by mothers to be potentially fatal in the ethnographic study were divided into two groups: one which included “traditional” diarrhoeas and the other “modern” diarrhoeas. “Traditional” diarrhoeas included empacho, sol de vista, fallen fontanelle whose causes according to the mothers were not similar to those of western medicine. Those that did have similarities to western medicine were classified as “modern”, such as worms, parasites, infection and dysentery.

Table 2 shows the response of mothers to “modern” or “traditional” diarrhoeas, considered to be dangerous. It includes a sampling of 120 children from the total group of 216 children under the age of five. A relationship can be distinguished between the mother’s diagnosis and her response to the diarrhoea. In the case of “traditional” diarrhoeas the administration of laxatives and visits to the traditional midwife or healer were more common. However, also in some cases, modern treatments were sought (doctor, ORT).

Table 3 records the responses of the mothers according to the diarrhoea most frequently suffered by their children of different ages and to the question of whether or not their children under five years had ever had that type of diarrhoea. As can be observed, the epidemiology of the types of diarrhoea was different according to ages. During the first years of life, “traditional” diarrhoeas were the most important. It can also be noted that dysentery was the less frequent (13%) type of diarrhoea while infection the most frequent (67%). More than a quarter of the mothers indicated that one or more of their children had suffered from at least one of the “traditional diarrhoeas”.

The 799 women over the age of 14 who were surveyed also informed the investigators of children who had died and the cause of death. In this group, 3516 children had been born and 451 had died, 143 from diarrhoea (32%). Table 4 indicates the type of diarrhoea suffered by the child upon death, according to the mother’s diagnosis. Three types of diarrhoea - empacho, sol de vista and fallen fontanelle - caused 26% of the deaths. As indicated in table 2, only 18% of the mothers

Table 2. Percentage of cases and types of diarrhoea according to health resources and treatments sought by mothers of 120 children under five and their perception of the diarrhoea as “modern” or “traditional”.
Epidemiological survey, municipality of Villa Carlos Fonseca, Nicaragua, 1990.

Health resource sought	Modern		Traditional
	Parasites	Infection	Empacho, Sol de Vista
	Worms	Dysentery	Fallen Fontanelle
Did not seek help	60	49	64
Visited a doctor	35	49	18
Visited a traditional mid wife or healer	5	2	18
Used ORT (total)	9	21	18
Visited a doctor and used ORT	5	29	50
Did not visit a doctor, but used ORT	11	14	11
Used antibiotics	9	44	46
Used parasite medication	38	14	9
Used laxatives	5	2	14
Used medicinal plants	13	12	0

ORT = oral rehydration therapy

Table 3. Frequency percentage of different types of diarrhoeas according to the age of the child among children of the 391 mothers who were interviewed, according to the responses to questions indicated below.
Epidemiological survey, municipality of Villa Carlos Fonseca, Nicaragua, 1990.

Type of diarrhoea	Age			
	0-12 mos.*	1-5 years τ	0-5 years	Sometimes \bullet
Parasites	9	40	24	62
Infection	26	11	19	67
Bad stomach	4	12	8	47
Empacho	13	2	8	38
Pujo	9	4	6	52
Hot stomach	10	6	8	51
Movimiento	11	3	7	61
Worms	4	21	13	59
Dysentery	3	5	2	13
Fallen Fontanelle	3	0.25	1	25
Sol de vista	4	0.25	2	32
Sol de cielo	3	0.25	2	30

*What type of diarrhoea was most frequent in your children between the ages of 0 and 12 months?

τ What type of diarrhoea was most frequent in your children between the ages of 1 and 5 years?

\bullet Had one or more of your children under five years of age this type of diarrhoea at any time?

take their children in this state to the doctor.

A relationship, though not statistically significant, was discovered between age and schooling of

the mothers and the type of help sought by them. Mothers who took their children to traditional midwives or healers were older (on average 30.3 years) and had less formal schooling (2.8 years on average) than those who took their children to the health center (on average 27.4 years with 4.1 years of schooling). Mothers who did not seek help were on average 28.5 years of age with 3.3 years of schooling.

Table 4. Number and percentage of 143 children under the age of five who died from different types of diarrhoea, according to the mother's diagnosis and a comparison with its incidence. Epidemiological survey, municipality of Villa Carlos Fonseca, Nicaragua, 1990.

Cause of death	No. of deaths	%	Incidence*
Infection	30	21	17
Empacho	27	19	8
Dysentery	16	11	3
Worms	9	6	5
Sol de vista	6	4	1
Fallen fontanelle	4	3	1
Parasites	3	2	21
Pujo	1	1	7
Bad stomach	1	1	11
Did not know	46	32	12
Total	143	100	---

*Based on Table 1.

Discussion

The typology of diarrhoea that emerges from both studies is similar to those described in other research carried out in Nicaragua³¹⁻³³ and to those that have been elaborated for other Central American countries^{5,31,34} and other Latin-American cultures outside the isthmus^{35,36}. Empacho in Nicaragua is similar to what is also called empacho in Honduras, Guatemala, Mexico, Peru, Chile and among Puerto Ricans in the United States^{5,15,31,35-38}, and "pega" in Costa Rica³⁹. It is also somewhat similar to what is called "infection" in Ecuador⁴⁰.

The classification of "cold" or "hot" is the central organizing principal underlying popular etiology of diseases within Latin American countries^{41,42}. In Nicaragua, this classification explains the origins of diseases such as "sol de vista", and "hot stomach". Furthermore, it characterizes food and beverages, and indicates whether it is convenient or not to consume them. Nevertheless, it is a system that is not used in a generalized or coherent manner and can be compared to the case of Mexico, where the classification of "cold" and "hot" remains, but only in a very rudimentary way^{33,43}.

It is interesting to observe that the frequency with which the different diarrhoeas occurred in the 216 children, during the two weeks prior to the survey (see table 1), coincided considerably with those noticed by mothers in their children between the ages of 0 and 5 years of age (see table 3). This reveals a consistent popular nosology and a clear epidemiological pattern of the different

types of diarrhoea.

The epidemiology of the different types of diarrhoea appeared to be different depending on the age of the children. The “traditional” diarrhoeas played a significant role during the first year of life, when mortality resulting from diarrhoea is at its highest. Of infant deaths 26% were attributed to “empacho”, “sol de vista” and fallen fontanelle, which is a very high number if the rate of frequency of occurrence is taken into consideration. This is especially true for “empacho” (see tables 1 and 4). Diarrhoeas identified with these names presented the following inconveniences: mothers were less likely to visit a doctor, and more likely to visit a “traditional midwife or healer”, and more likely to use laxatives, increasing the risk of dehydration. This practice was motivated by the belief of many mothers that “doctors do not know about such diarrhoeas as ‘empacho’ and do not know how to cure them”. Dysentery also claimed many victims if its low incidence is taken into consideration, although the majority of mothers did visit a doctor when they recognized it as such.

In both studies, the mother’s diagnosis was very important in deciding what type of help to seek and what kind of treatment was required in each case of diarrhoea. This result has also been obtained in other studies carried out in other socio-cultural contexts, such as Zimbabwe⁷, Pakistan^{9,12}, Bangladesh¹⁰, South Africa¹¹, Sri Lanka¹³, India¹⁴ and Guatemala¹⁵. In many studies it has been proposed that the popular taxonomy of diarrhoeas, as well as mothers’ traditional responses to them, be taken into account when designing programmes to promote ORT⁷⁻¹⁴. Also in other studies it is suggested that “traditional midwives or healers” be incorporated into these programmes^{11,12}. Furthermore, it is recommended that health personnel’s awareness of traditional beliefs be increased in order to improve communication with mothers. It is thought that if the personnel understood popular beliefs and used the popular taxonomy for diarrhoeas, it would facilitate access of members of traditional cultures to health services^{7,9}.

In the ethnographic study, no relationship was established between the level of formal education and the age of mothers and their “traditionalism”, but it was noted that mothers with more years of schooling had a more accepting attitude toward the use of ORT. In the second study, it was determined that the mothers who had received more schooling visited health centres more often.

As can be observed in table 2, mothers used “traditional” treatment (such as medicinal plants) for “modern” diarrhoeas, and also “modern” treatments for “traditional” diarrhoeas. It can thus be inferred from this information that, although mothers will not change the traditional taxonomy for diarrhoea, their attitude towards treatment could change. This is why they were combining “traditional” and “modern” treatments, similar to what was described in an ethnographic study carried out in Papua New Guinea⁴. This is also the case in Hispanic communities of the United States where popular taxonomy, similar to that of Nicaragua^{38,44,45}, is still used for diarrhoeas even though mothers take their children to doctors.

Health personnel often scorn many practices that are part of “traditional” treatment, considering them to be a danger to health. For example, it is believed that laxatives increase dehydration, without taking into account the fact that usually only a very small doses is given to children. It is also thought that wrapping a child with fever in a sweaty cloth could provoke febrile convulsions, without considering the fact that this procedure is often combined with an alcohol or herb bath.

In 1990 the use of ORT was still infrequent and was not generalized in rural Nicaragua. Its use by 17% of the mothers in our study coincided exactly with the 17% registered in a study carried out in Honduras, where traditional medicine is similar to that of Nicaragua⁴⁶.

The ethnographic study showed that a common practice was giving rice water to children with diarrhoea. It is worth mentioning that if part of the sugar were replaced by salt in the rice water, it would become an adequate means of oral rehydration.

Conclusions

The studies described here confirm that traditional beliefs and practices continue to exist in the rural areas of Nicaragua and have a direct influence on the manner in which mothers respond to diarrhoea in their children. Furthermore, they limit the use of health services and ORT.

On the other hand, although mothers maintain the traditional taxonomy for diarrhoea, it is also true that their behavior can be changed regarding its treatment. It has been observed that “traditional” and “modern” treatments are, at times, combined.

It would be interesting to carry out research on traditional treatments and measure their effects. Empirical data should be obtained on practices such as the use of laxatives and massages applied when the case is believed to be “empacho” and the wrapping of children in a sweaty shirt when “sol de vista” is suspected, in order to evaluate the merits of each treatment and stimulate their adaptation or replacement. In this sense, promoting rice water with salt could be appropriate for replacing commercial oral rehydration salts.

The use of ORT was not very frequent in the population studies, but it was evident that its use increased when mothers visited the health center. In order for health services to receive all types of diarrhoea, including “traditional” diarrhoea, there must be better communication between mothers and health personnel. Therefore, it is essential that this personnel be trained in the knowledge of traditional medicine. This would permit understanding of traditional beliefs and practices and the use of popular names for the different types of diarrhoea during medical visits. It would also lead to an increase in the understanding between mothers and health personnel, and, possibly the acceptance by mothers of the recommended “modern” treatment or adaptation of traditional medicine (such as rice water with salt), and of the fact that health services are valuable resources in the treatment of any type of diarrhoea.

Traditional medicine can and should play an important role in designing programmes for the prevention of diarrhoea. The results of the two studies described here can form a solid basis for planning and executing such programmes, as was done previously in the case of promoting hygiene in Villa Carlos Fonseca. A promotional programme must recognize the importance of popular knowledge, respect it and use it as a guide in the modification of potentially harmful practices. It is also important to recognize other difficulties, such as the lack of water, which at times creates an obstacle to these changes.

In Nicaragua, popular knowledge is a result of both traditional and modern medicine. A good programme must take into account this plurality and seek the means for explaining the causes of diarrhoea, combining traditional and modern concepts. Mothers will feel motivated to change

their habits only if they understand the relationship between harmful hygienic practices and their children's diarrhoea. Infant mortality caused by diarrhoea could be reduced considerably in Nicaragua and other countries with similar societies and cultures if popular knowledge of diarrhoea were recognized, if communication between mothers and health personnel were improved and if programmes were designed to prevent diarrhoea and promote ORT in accordance with local cultures.

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