J Diarrhoeal Dis Res 1993 Dec;11(4):243 – 248
0253 – 8768/93 $ 1.00 + 0.10

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The Ethnophysiology of Digestion and Diarrhoea in a Bangladeshi Hospital Population

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ABSTRACT

The results presented in this paper are drawn from a study of the acceptability of the weaning food, ARGC. The study aimed to investigate attitudes and practices surrounding weaning and the dietary management of diarrhoea. One hundred and twenty mothers of children aged between six months and 24 months suffering from mild diarrhoea and admitted to the ICDDR,B treatment centre were randomly selected. Diarrhoea was attributed by mothers to a number of causes; most common were contaminated food and breastmilk. Breastmilk was understood to have been *spoiled* either by the mother's diet or mystical forces termed *batash*. Batash was also suspected of directly making children sick in some instances. Thirty – six per cent of mothers attempted to manage diarrhoea at home by withholding normal foods from their children's diets and others modified their own diets. Less than a quarter of the children were normally fed vegetables, *dal* (lentils) or small fish. It appeared that fish was rarely given to young children and was regarded with some ambivalence and considered potentially attractive as a vehicle for malign forces that might attack young children and their mothers and cause illness. People were unwilling to feed their children fish and other items of the normal family diet because of notions about the digestive system and the concept of "digestive power" and the idea that young children did not have the digestive power to digest certain foods. It was suggested that early weaning might lead to poor and abnormal growth and development.

Key words: Diarrhoea; Paediatric; Weaning; Nutrition.

INTRODUCTION

In many developing countries the weanling child (a breastfed child who is regularly receiving additional food) has a high risk of disease and death. The initiation of adequate weaning is a critical event (1). Death is closely related to the severity of illness and nutritional status of the child so that the undernourished children have a higher risk of death from diarrhoeal disease than their well nourished counterparts (2). Many Bangladeshi children suffer from undernutrition; one contributing cause that has been postulated for poor nutrition is the withdrawal and reduction of food during the illness (3).

The weanling child has to make a gradual transition from pure breastfeeding to his or her share of the family diet. In a context where resources are very limited, weaning advice should be appropriate; if the diet is too expensive or requires extra fuel or time to prepare, parents may be unable to provide it. Similarly if the food is culturally unacceptable, people are unlikely to follow advice. Nutrition messages are more likely to be effective if they are based on an understanding of existing beliefs and practices.

For these reasons it is important to understand how parents comprehend their children's nutritional needs. Although many studies have documented the nutritional status of Bangladeshi children and some have postulated behavioural factors that may influence this, relatively little has been written on the ways parents understand children's growth, development, and nutritional needs. This paper discusses findings from an anthropological study of the beliefs and practices of mothers with children suffering from diarrhoea. The principles that underlie these beliefs and practices stem from notions about the nature of the digestive system and of diarrhoea and the ways it is believed to afflict young children and their mothers. The concept of digestion is reported to be central in South Asian systems of

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health belief such as the *Ayurvedic* system in which all diseases are believed to be caused by "unripe food juices" produced when the digestive process does not function correctly (4).

The management of diarrhoea is influenced by beliefs about its causes and relates to ideas about the maintenance of a balanced body temperature (5). Whereas diseases such as respiratory infections are associated with cold and should be treated by foods classified as hot, diarrhoeal diseases tend to be associated with heat and thus require that the individual balance her diet with cooling foods. Temperature is only one dimension of the diagnosis and treatment of diarrhoea. Dietary modifications for patients and their mothers, in the case of breastfed infants, are regarded as a key component of the treatment and management of diarrhoea.

There is a common saying in Bangladesh that translates roughly as "fish and rice make a Bangali". Having fish and rice are synonymous with well-being according to another saying. Fish play an important part in marriage rituals when they are given by the groom's family to the bride's family and are incorporated into designs drawn on the floor. In this context they are spoken of as auspicious and described as "fertility symbols" (6). Fish and rice are essential components of the Bangladeshi diet in terms of cultural identity as well as nutrition; paradoxically these foods may be restricted in certain circumstances.

MATERIALS AND METHODS

As part of a study which also evaluated the acceptability of amylase-rich germinated cereal (ARGC) as an additive to weaning foods (7), 122 mothers of children aged between 6 months and 24 months were randomly selected over a two-month period and interviewed when their children were admitted to ICDDR,B's Dhaka treatment centre suffering from mild diarrhoea. They were not stratified by type of diarrhoea. Sixty-five per cent of the children were boys and 35% girls which is consistent with the male/female ratio of the patient population in the centre (unpublished paper). In the initial interview, the mothers were asked about their child's previous dietary history and their ideas about why their children had become sick. Later small groups of four to five of these women were asked to participate with their babies in a meal followed by a focus group discussion on weaning practices and ideas about infant and child nutrition. The focus group discussions were conducted by a moderator, and several assistants helped the mothers with their babies when they became restless and observed the feeding practices. These discussions were recorded, transcribed, and translated for analysis. Two weeks after discharge each family was visited at home to see if their ideas and nutritional practices had changed as a result of their hospital stay. Mothers were interviewed and a body map was presented, and they were asked to use this to explain how they understood their child's digestive processes. Body maps are outline diagrams representing part or all of the child's body and are used to enable respondents to visualise and describe their concept of physiological processes and structures (8). Regardless of their educational status, women did not appear to have any difficulty in using the outline drawings to explain their concepts of bodily processes. The interviewer recorded the mothers' commentaries and the terms they used beside the diagrams.

RESULTS

Description of the study population. The mean age of these children was almost twelve months, and 85% of them were still being breastfed. They came from households with an average of five members. The median monthly family income was Tk.4,199 (105 US$) and the mean monthly income was Tk.2,400 (60 US$). Eighty-six per cent of the mothers said they had no paid employment. Sixty-three per cent of the families lived in houses with a mud floor; 20% of them did not possess a bed, but 51% had one bed and the rest had more than one. The mean age of the mothers was 23 and their mean educational level was 4 years. The mean age of the fathers was 32 and their mean level of schooling was 6 years.

Normal Diet. On admission, mothers were asked to recall the foods their children had eaten on the day before the onset of diarrhoea; 81% reported that their children had been breastfed, 32% were reported to have been bottlefed, 41% were said to have eaten *suji* (granulated rice), 39% to have eaten rice, 24% to have eaten vegetables and 17% to have had lentils. Six per cent were said to have been given egg, 5% to have eaten fish, and 2.5% meat.

Causes of diarrhoea. The respondents were asked about the causes of their children's diarrhoea and the treatment steps they had taken prior to coming to the hospital. Although it is possible to categorize the different major causes to which they attributed their child's diarrhoea, in many cases they identified several interrelated causes which had a dietary aspect and this explains the variety of treatment combinations they sought. A typical example is provided in the following description of treatment seeking:

> "When my child's diarrhoea started I first discarded some of my breastmilk. Then as the diarrhoea persisted I took him to a homeopath and after that I tried eight different *kobiraj* (spiritual healer) who all gave sweeping treatment."

The idea that illnesses can be caused or compounded by a multiplicity of factors acting alone

or in combination has been recorded elsewhere in the sub-continent (4).

Of the total group, only 46 said that ICDDR,B was their first source of treatment apart from oral rehydration solution (ORS). Seventy-six had tried using ORS before they came to the hospital. Many had approached a variety of practitioners either consecutively or concurrently. In many cases advice was first sought from relatives or neighbours and in some instances economic considerations were reported to have influenced the choice of treatment. Although both economic and geographical factors influence treatment choices people tried anything that they believed would improve their child's condition.

The two most common, and often interconnected, reasons cited for diarrhoea was that the child might have ingested something unclean or eaten contaminated food or water. No one mentioned the child having dirty or unwashed hands as a cause, but many explained how difficult it was to keep a mud floor clean and prevent children from putting dirty things in their mouths (63% of the sample lived in houses with mud floors):

> "I think my child ate something dirty from our mud floor and for that reason she got diarrhoea."

> "She plays the whole day on the ground and I think she must have put some mud in her mouth and got diarrhoea in that way."

Some blamed the child's last meal and often related how this was given by a neighbour or relative:

> "In the morning he ate nicely. Later I bought *khichuri* (a mixture of rice, lentils and spices) from my neighbour and fed him that. After eating the *khichuri* he started vomiting and I think that gave him diarrhoea."

> "In the morning I breastfed her and after that I gave her *khichuri*. But in the night suddenly she started vomiting and had diarrhoea. I don't know why she got diarrhoea but my next door neighbour gave her rice pudding made with *gur* (unrefined cane sugar), maybe that gave her diarrhoea."

> "She got diarrhoea from something dirty. My older child fed her with a bottle of milk which had been prepared the day before. For that reason she got diarrhoea."

In none of the above cases was it directly suggested that the neighbours or others had caused the illness through bad will or the evil eye (*nozor*), but in three other cases this was directly cited as the cause of diarrhoea:

> "A girl gave my little son a boiled egg after which he got diarrhoea, I think that that girl looked at him and that's why he got diarrhoea."

In focus groups many women described prohibitions on eating fish, vegetables and other foods for lactating mothers once the breastfed child had diarrhoea, but only a few directly blamed their own diets:

> "My mother-in-law explained that my child got diarrhoea because of what I ate. I ate vegetables and fish and this made him sick."

After ingestion of a particular food or contaminated substances, the most commonly cited cause of diarrhoea was *batash* or bad wind which was mentioned as the first cause of diarrhoea by 17 mothers in the interviews. In the focus groups, however, more than 17 mothers said that *batash* had contributed to their child's illness. Twenty-eight women said that before coming to the hospital they had tried a form of exorcism known as "sweeping" (*jhara*) commonly used to treat the *batash* which causes illnesses such as diarrhoea. *Batash* or *kharap batash* was a commonly used euphemism for some kind of impersonal malign force causing sickness. It may have struck either the mother's milk and thus indirectly caused the child to be ill or caught the child directly. Mothers often interpreted a "heavy" or "full" feeling in their breasts as a sign that their milk had been "spoilt" by *batash*:

> "My breasts became heavy because *batash* blew over my body and hit my breasts, after that when I breastfed my child she began vomiting and got diarrhoea."

Batash was thought to be attracted to breastmilk so that breastfeeding women were advised to protect and cover their breasts. Ideas about *batash* were sometimes combined with ideas about ingestion of dirt or certain foods. Evil spirits were thought to be attracted to dirt and it was said that women might be struck by *batash* when they went to defecate or passed a latrine or other dirty place. Certain times of day were reported to be more dangerous than others, such as mid-day, sunset, and after dark:

> "Since the child is ill the mother cannot eat rice at night. If she does, the child's illness will deteriorate. ..... whatever may be the illness, the mother should not eat rice at night because diseases are worse at night."

Some phases of the lunar cycle were also said to be dangerous and associated with the onset of illnesses including diarrhoea.

The dark night of the moon's cycle (*amabosshya*) and the full moon (*purnima*) were frequently mentioned as dangerous times:

"During *amabosshya* and *purnima* mothers should be careful about themselves and their children too. They should not go to the jungle, to the road or to dirty places. If we go to such places on these evenings, *batash* may blow on our bodies."

This woman made the link between dangerous times and places for *batash* explicit.

When young children were ill, mothers were often advised to avoid fish because of its association with ghosts and because the smell was said to attract *batash*. In focus groups, women made explicit remarks such as "There are ghosts in fish" or "Ghosts live in fish". In one group two women explained:

"When fresh fish are brought into the house and if a child goes near the fish, a ghost may catch the child and that's why the fish should first be dried over the fire before being brought indoors."

"When a child is born we don't bring fish into the room without first drying it over the fire because children can get many diseases from fish."

Examples were cited of husbands bringing fish home from market and of *bhut* (ghosts) jumping on to the fish on the way and using it as a vehicle to enter the home and attack a child. In many cases, although the avoidance of fish was mentioned, the link with ghosts was not explicit. Fish was just one of the foods that mothers and children were expected to avoid and in many focus groups women described how relatives had tried to enforce these prohibitions:

"Fish was forbidden to me. Everything was forbidden by my in-laws: meat, fish, vegetables. I did not listen to them but they would not bring fish home and they would not allow my husband to bring home fish. ... They said my child's diarrhoea was caused by my breastmilk and that was why they wouldn't give me meat or fish."

The consistent reference to fish avoidance was surprising as it is often cited as the favourite item of the Bengali diet. Despite the relish with which people discuss its merits as a food item, certain ambivalence surrounds the eating of fish by women and small children. In our initial interviews, we asked mothers to list the foods that their children commonly ate and, although rice was mentioned by 62%, only one mentioned that her child regularly ate fish.

Thirty-six per cent of mothers said they had withheld some items of food from their children's diets as an attempt to manage the diarrhoea at home. Witholding food was sometimes described as the first measure taken to treat the diarrhoea:

"First I stopped feeding my daughter, then I took her to a homeopathic doctor who gave some medicine. I fed her this but her condition got worse so I took her to an allopathic doctor. He gave me saline and some tablets, but after three lots of saline she was getting worse. When I saw that she could not lift her head I realized it was serious. So at about ten o'clock we brought her here."

Some foods were avoided or chosen because of their innate qualities which balanced a perceived imbalance in the body. A few breastfeeding mothers were told to avoid eating anything except plain rice and salt.

The implication is that eating is regarded as potentially dangerous in some circumstances because while the individual eats she might ingest other harmful influences in the environment. Similarly, the evil eye was said to have caused harm through the medium of food rather than by the direct gaze on the victim. A persistent theme implicit in many accounts was the idea that food could incorporate harmful influences and that these could be ingested and incorporated by the person consuming it. In the same way that *batash* could get "inside" the breast and spoil the milk so the qualities of foods that the mother ate were believed to be incorporated in her milk.

When discussing the kinds of food children should eat, mothers emphasised that cold, "stale" (*bashi*) foods were bad and that food should also not be too hot or heating in its effect; it should be warm. "Stale" describes foods, such as rice, cooked several hours ago and meant to be eaten hot. As fuel is scarce and expensive and access to cooking facilities may be limited in the urban slums, it may be difficult to comply with the advice to feed children freshly cooked food several times a day. Thirty-two per cent of the mothers did not have their own stoves.

When children have diarrhoea, foods might be avoided on the grounds that they were too heating in their effect. One mother explained this in a focus group:

"I didn't give him hot foods because you shouldn't when a child is sick. I'm not giving cold foods either now that he's sick because that might cause a fever."

Some felt that soft foods were preferable for small children. Mothers of children under ten months were more likely to say this and some thought that hard foods were more difficult for infants to digest. People had different ideas about the particular kinds of rice that were best for children, some grains were perceived to be "softer" than others and, therefore, better and easier to digest.

Ideas about normal digestion, growth and development. One idea frequently mentioned was

"digestive power"; mothers reported that children did not have the digestive power to digest certain foods. Some described how illness had "weakened" their child's digestive power. When shown an outline of a baby's body and asked to explain or draw what happened to food inside the child, many located digestive power in the lower abdomen and indicated its position with a point or a dot. This contrasted to the way other organs such as the liver, stomach, or lungs were represented and given a form and space that was considerably larger. Some placed it within another space such as the belly (*pet*). Many identified several places where food was said to be stored and finally digested. Although it was physically located, digestive power seemed to relate to a force rather than an organ.

Although digestive power was located in the belly, appetite, *mukher ruchi* was in the mouth. Appetite and digestion, according to many respondents, were linked so that a child who did not want to eat would be unable to digest food. Many said that forcing a child to eat, against his or her will would lead to diarrhoea. There was a general consensus that it was wrong to force children to eat and it was observed that during the feeding sessions this was rare. Appetite was seen to be distinct from hunger or nutritional need, thus a person might recognize hunger but have no appetite. Mothers perceived babies to be hungry when they cried and were "unsatisfied" after feeding. Lack of appetite was commonly cited as a symptom of illness.

Although many had heard from the media or health workers that children should be introduced to solid foods such as rice, vegetables and pulses, persistent concerns were expressed about the effect that the early introduction of such foods might have on a child's development. Some identified a swollen belly as the consequence of the early introduction of solid foods. Some also related this to poor general growth and even to deformity:

> "...if we feed children rice then their bellies become big and their heads get small and their necks are short and their limbs are weak and thin."

Another common idea was the association between a big belly and worms (*krimi*) which it was said were caused by diet. Some described how early introduction of food leads to diarrhoea and the production of gas which swells the belly. Presence of gas was often referred to as were sounds which indicated that the digestive system was not working properly. One woman described how bad it would be to feed her daughter too much too early because her belly would be enlarged and she would consequently eat "more than she needs". Fat babies and children were not idealized as healthy ones. Big bellies were regarded as unhealthy and unnatural:

> "...if we feed infants rice they will not grow and their bellies will become big."

DISCUSSION

Children's diarrhoea was attributed to various causes. Many identified contaminated food as a cause and others blamed their own breastmilk believing it to have been "spoiled" either by their own diet or by mystical forces loosely called *batash*. *Batash* was also sometimes suspected of directly making children sick and in a very few cases the evil eye was blamed. Thirty-six per cent of mothers tried to manage diarrhoea at home by withholding normal food items from their children's diets and others modified their own diets for the same reason. A few said they had been advised by medical practitioners to withold breastmilk or other foods.

In our demonstration meal, we served what we believed to be the common items of the Bangladeshi diet; rice, vegetables, *dal* (lentils) and small fish. Our findings suggested, however, that less than a quarter of the children were normally fed vegetables, *dal* (lentils), or small fish. Despite its availability, fish in particular was rarely given to young children, being regarded with some ambivalence and considered potentially attractive as a vehicle for malign forces that might cause illness. The reasons why people were unwilling to feed children other items of the normal family diet related to notions about the digestive system and the concept of digestive power. It was feared that early weaning might lead to poor and abnormal growth and development.

CONCLUSION

It has been estimated that the average Bangladeshi child suffers 3-5 diarrhoeal episodes during the early years of life, with each episode lasting 3-5 days for a total of 9-25 days during a year (3). The implications of our study are: Firstly, that health and nutrition education should focus on the nutritional needs of the sick and convalescent child and his or her mother. Anorexia may be a cause of reduced food intake by children during diarrhoea (9); our findings suggest that mothers recognise that their children have reduced appetites and are reluctant to force them to eat at these times. For these reasons it is important to emphasise the need for increased dietary intake in the convalescent period (10).

Secondly, educational messages should address the concerns outlined above and emphasize the positive attributes of fish, lentils, rice, and other popular items of the adult diet and their suitability for infants and children as well as their mothers.

Thirdly, although small children need frequent small feedings, due to lack of fuel and other resources, many families are not able to provide frequent, hot, cooked meals. Cold rice and other cooked foods are regarded as "stale" and dangerous for young or vulnerable individuals, and as they are also potential breeding grounds for bacteria, it would seem sensible to promote other dry snack foods such as puffed rice and biscuits as additions to the

young child's diet.

Finally, people are more concerned with developement than growth. Big children are not regarded as synonymous with healthy children. Nutrition messages should focus not on size but on the qualities of normal household foods and the qualities, such as strength, which their consumption will engender in the child. Digestibility is regarded as an important attribute of weaning food.

ACKNOWLEDGEMENTS

We would like to acknowledge the invaluable and enthusiastic work of our four field assistants: Ms. Salima Sultana, Ms. Fardousi Sultana, Ms. Firoze Begum and Ms. Hassna Ara Begum. We are also grateful to Mr. Mahmudur Rahman, Preventive Health Officer ICDDR,B, and Mrs. Majid, Dietician, as well as other hospital staff for their help. Sarah Salway made helpful comments on an earlier draft of this paper. Finally, thanks to Mr. Mesbahuzzaman and Mr. Hanif for secretarial assistance. The study was undertaken in the Clinical Sciences Division of ICDDR,B and was funded by the Swiss Development Cooperation. The ICDDR,B is supported by the aid agencies of the Governments of Australia, Bangladesh, Belgium, Canada, Denmark, France, Japan, the Netherlands, Norway, Saudi Arabia, Sweden, Switzerland, the United Kingdom and the United States; international organizations including; the United Nations Development Programme, the United Nations Population Fund, the United Nations Children's Fund, and the World Health Organization; and private foundations, including the Sasakawa Foundation and the Ford Foundation.

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