

Morbidity pattern of infants in rural Bangladesh

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Abstract

This report is part of a prospective study investigating the consequences of low birth weight on infant growth, morbidity and feeding practices in rural Bangladesh. The study registered 644 infants who were followed-up for one year of their age. The study was conducted in three unions of Manikganj district of rural Bangladesh during 1993-1994 to observe the morbidity pattern of infants, assess the treatment pattern for illnesses, and to study the consequence of Low birth weight (LBW) on morbidity during infancy. The overall prevalence of illness was 4.6% among infants aged under 1 year. ARI was most prevalent morbidity among infants under 1 year. An infant suffers from 3-4 episodes of ARI or 2 episodes of diarrhoea or 1 episodes of skin infection during the first year of life. Among infants of 5-12 month old, diarrhoeal disorders (watery, mucoid or bloody type) occurred more frequently comparison to infants of 1-4 months old. Low socioeconomic condition, illiteracy of parents, poor and unhygienic living condition, might be linked with infant morbidity. We found high morbidity prevalence among LBW infants compared to normal or high birth weight infants, but this difference was not statistically significant. Among infants who received any treatment, 71% got allopathic treatment, the main treatment provider being the village doctors. A large proportion of infants did not receive any treatment due to the perception that "for mild illness treatment is not necessary." Community should get health education on prevention, care and danger signs of major illnesses such as ARI and diarrhoea. Provision of sanitary latrines, safe water, and promotion of health education on personal hygiene and environmental sanitation might reduce the risk of morbidity among infants.

INTRODUCTION

Each year about half of the infants born with low birth weight (<2.5 kgs) in Bangladesh (1,2). Low birth weight (LBW) is a major contributory factor in infant mortality and morbidity (3-5). This can have a long term consequence on physical and mental health for those who survive (6). The long term adverse effects of LBW might reduce productivity and income leading to lower quality of life and socioeconomic status. These factors again lead to chronic malnutrition and might increase the risk of low birth weight babies creating a vicious cycle. However, population-based information on LBW related morbidities are inadequate in many developing countries. Most studies done on infant health focused on the magnitude and causes of infant mortality (7-10), but very little work is done for defining and quantifying morbidity. The mechanism by which the socioeconomic determinants affect morbidity are remained unexplored. However, studies reported that socioeconomic, nutritional and behavioural factors are linked with child health (11,12). Parental education and sanitation are also found to be linked with infant health (13). A study indicated that birth weight and birth order might influence the magnitude and severity of the disease (14). However, population-based studies done in developing countries identified that upper respiratory tract infection and diarrhoeal disorders are the most common causes of illness and death among infants (14-16). Perinatal and neonatal mortality and morbidity are reported to be associated with maternal and obstetric factors especially with prolonged and difficult labour(17,18). In Bangladesh, most births take place at home and manipulation during delivery is common (19). Therefore, infants are more vulnerable to have birth injuries and long term disabilities related to it. BRAC implemented a community-based primary health care (PHC) programme during 1986-1990 in rural areas of Manikganj district which was later integrated with rural development programme of BRAC. The prime objective was to improve the health and nutritional status of rural mothers and

children. This programme had 8 components as follows: teaching of oral rehydration therapy teaching, expanded programme on immunization, vitamin A capsule distribution, nutrition education, TBA training, safe water and sanitation, family planning, and basic curative services. Besides, a strategy to achieve community participation in the programme areas, mother's club and village health committees were formed. In addition to direct interventions regarding health, BRAC adopted an integrated approach including non-formal education and income generation activities which is expected to have a positive and sustained impact on mortality and morbidity. It is important for BRAC to know whether BRAC programmes have impacts on morbidity among infants. Hence, this study is expected to obtain information on morbidity pattern of infants in Manikganj district and also to compare the morbid conditions of LBW and normal birth weight infants.

OBJECTIVES

The objectives of the study were to: a) to observe the morbidity pattern of infants in rural Bangladesh; b) assess the treatment pattern for illnesses; and c) study the adverse consequences of LBW on morbidity during infancy.

METHODS AND MATERIALS

This was part of a prospective study investigating the consequences of LBW on infant growth, morbidity and feeding practices in rural Bangladesh. The study registered 644 infants who were followed-up for one year of their age. The study was undertaken in three unions of Manikganj district in rural Bangladesh during 1993-1994. The pregnant mothers were identified through house-to-house visits and they were registered at their third trimester of pregnancy. During registration, information on maternal factors such as, age, reproductive history, nutritional status, education, socioeconomic status were collected. The interviewers selected one person from each of the household as informant who

gave the information about birth. Birth weight of a new born baby was recorded within 48 hours of delivery and during the same visit the babies were registered for subsequent follow-up. After registration the infants received monthly follow-up visits for one year. During each visit mothers were asked about the illnesses of their infants.

Although attributes of sickness are generally termed "morbidity", there are two fundamental types of morbidity; self-perceived and observed (20). Self-perceived morbidity refers to measures that are perceived and reported by an individual, usually in response to inquiries regarding illness. Observed morbidity is assessed through an independent observer using specific methods which can be repeated with some degree of consistency. Self-perceived morbidity measures can be grouped into four categories; symptoms and impairments, functional disability, handicap, and health service use. On the other hand, observed morbidity measures can be divided into four categories: physical and vital signs, physiological and functional tests and clinical diagnosis. However, large discrepancies between self-perceived and observed morbidity have been reported by some studies in developing countries (21). To minimize the gap between self-perceived and observed morbidity "salience of illness" concept has been developed (22), in which subjects are asked to report the changes in the activities, change in the diet, or consultation with health provider.

Here mothers reported about the illnesses of the infants as proxy respondents. The mothers were asked to report on illnesses of the infants during previous month and also the "salience of illness" were asked for confirmation of the illness. Finally, list of symptoms (tracer list) was used to probe on morbidities.

RESULT

Table 1. Distribution of diseases experienced by the infants by month of age.

Disease prevalence \ Months	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	11 %	12 %
ARI	23.7	28.4	31.0	33.2	31.0	30.5	31.2	25.8	27.4	25.1	22.8	20.8
Diarrhoeal-disorders	4.3	4.6	6.5	4.3	7.5	9.4	9.8	12.8	9.4	13.9	13.1	13.0
Skin disease	5.8	7.1	7.9	9.4	9.1	8.9	8.9	9.4	7.1	7.3	7.5	6.1
Measles	.5	1.2	1.4	2.3	2.7	2.4	3.5	2.6	1.9	1.0	.8	2.5
Tetanus	.3	-	.2	.3	-	-	-	-	-	-	-	-
Helminthiasis	-	-	.2	.2	-	-	-	-	-	-	-	-
No health problem	65.3	58.7	52.7	50.2	49.6	48.8	46.7	49.3	51.8	52.4	55.8	57.6
Total cases	603	591	582	572	558	551	542	531	519	510	496	479

Table 1 shows the distribution of common diseases during infancy. ARI was found to be the most prevalent disease among infants of 1 to 12 months. Another common disease during infancy was diarrhoeal disorders which included watery, mucoid and bloody diarrhoea. The diarrhoeal disorders occurred more frequently among infants aged 5 -12 months compared to younger infants aged 1-4 months. Skin infections and measles-related illness are also found to be common among infants. Only few cases of tetanus and helminthiasis are reported.

Table 2. Distribution of mean of episodes of three major morbidities among infants aged under 1 year.

Diseases	Mean	SD	Range
ARI	3.5	2.2	1-11
Diarrhoea	2.0	1.1	1-7
Skin infection	1.3	.58	1-4

Table 2 shows the distribution of mean episodes of three major morbidities-ARI, diarrhoea and measles. It shows that on average an infant suffers from 3-4 episodes of ARI or 2 episodes of diarrhoeal disorder or 1 episodes of skin infection.

Table 3. Percentage distribution of different types of diarrhoea by month of age of the infants.

prevalence of diarrhoea	Months											
	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	11 %	12 %
Watery	73	44.4	63.1	68.0	42.9	63.5	62.3	73.5	65.6	65.3	75.4	80.6
Mucoid	23	37.0	28.9	28.0	52.4	23.0	30.2	20.6	26.2	22.2	16.9	14.5
Bloody	3.9	18.5	7.9	4.0	4.8	13.5	7.5	5.9	8.2	12.5	7.7	4.8
Total	26	27	38	25	42	52	53	68	61	72	65	62

Table 3 shows that watery diarrhoea was the most common variety of diarrhoea among infants aged 1-12 months. The next common variety was mucoid diarrhoea. The bloody diarrhoea (bassilary) was less prevalent than the other two varieties.

Table 4. Prevalence of anaemia among infants by month of age.

Month of age	Anaemic* (%)	Total cases
1	3.5	592
2	3.8	585
3	3.8	559
4	2.3	558
5	2.0	542
6	2.0	537
7	1.3	524
8	2.1	518
9	1.0	513
10	1.6	509
11	1.0	503
12	.8	479

* Anaemia was assessed by conjunctiva examination

About 3.5% of the infants of 1 month old were found to be anaemic (Table 4). There was a general trend of decreased prevalence of anaemia with increased age of the infants.

Table 5. Association between three major morbidities and fever*

Diseases	fever on examination %	Total episodes	Remark
ARI	8.5	666	chi sq= 12.3
Diarrhoea	4.4	1931	p<.00
Skin infection	7.6	131	

*Temperature recorded at the day of visit with associated disease

Table 5 shows the association between major three morbidities and fever by month of age. In 8.5% cases of ARI, 7.6% cases of skin infections and in 4.4% cases of diarrhoeal disorder high temperature was recorded on examination.

Table 6. Distribution of the socioeconomic characteristics of infants having three major morbidities

Characteristics	morbidity absent % n=489	morbidity present % n=151
BRAC membership		
member	29.4	27.2
nonmember	70.6	72.8
Household expenditure		
deficit	67.9	70.9
no deficiency	32.1	29.1
Paternal education		
illiterate	65.2	68.2
literate	34.8	31.2
Maternal education		
illiterate	68.7	71.5
literate	31.3	28.5

There was no significant difference between mean age of the mothers of the infants who had major three morbidities and mean age of mothers of the infants having no morbidities (26 vs 25 years). Of 151 households, 97.4% collected drinking water from tubewell. Only 1 household has pacca (cemented) floor and 83.1% were using kancha latrines (not made of cement). However, we observed a decreased risk of morbidity with increased number of living rooms in the households (Table 7). This relationship was statistically significant. The average family size of the households with morbid infants was 5 members. We could not show the relationship between family size and risk of morbidity. Among infants with three major morbidities, 27% were BRAC members and 73% were non members. Household economic expenditure of 71% households of the morbid group was deficit, 68% of the fathers of the morbid infants were illiterate, and 72% of the mothers were illiterate.

Table 7. Relationship between living rooms in the household and frequency of morbidities.

number of rooms	1-5 episodes % n=388	≥ 6 episodes % n=191	remark
1	58.2	65.4	p<.05
2	22.2	23.0	
3+	19.6	11.0	

Table 8. Association between birth weight and morbidity during infancy.

Birth weight	High disease* % (N=388)	Low disease** % (N=195)
Low birth weight	60.5	60.3
Normal birth weight	39.5	39.7

*High disease: >5 episodes of morbidities

**Low disease: ≤5 episodes of morbidities

Table 8 shows that of the 388 infants who suffered from more than 5 episodes of three major morbidities, 60% were low birth weight and 29% were normal birth weight infants. However, this difference was not statistically significant.

Table 9. Vaccine coverage of the infants.

Vaccines	coverage % N=644
BCG	85
DPT and polio	81
Measles	62
VAC	86

Table 9 shows that 85% of the infants received BCG vaccine, 81% DPT and polio, 62% measles vaccine and 86% received VAC.

Table 10. Type of treatment received for illness of the infants.

Type of treatment	Percentage (Total response =21,73*)
Allopathic	71
Homeopathy	13
Herbal	7
Exorcism	3
Sanctified water	2
Sanctified oil	3
Others	1

*multiple answers considered

About 71% of the infants received allopathic treatment for illness. In 13% cases homeopathy treatment was availed. The other types of treatment were herbal medicine (7%), exorcism (3%), sanctified water (2%), sanctified oil (3%) (Table 10). For 36% of the total episodes of the illnesses the infants did not receive any treatment. Village doctors were mainly consulted for treatment purpose. The most common reason cited for not getting any treatment was " for mild illnesses treatment is not necessary".

DISCUSSION

In this present study we found that overall prevalence of illness was 4.6% among infants aged under 1 year. However, in rural Ethiopia 5.8% illness was reported among under 5 children (13). We found that ARI was the most prevalent morbidity among infants under 1 year which is consistent with the findings of other studies done in developing countries (13,14, 23, 24). The findings of the present study show that the mean episode of ARI was 3.5 and for diarrhoea it was 2. Similar finding were reported by Muhe et al (13). Among infants of 5-12 months old, diarrhoeal disorders occurred more frequently in comparison to infants of 1-4 months. This finding is consistent with the result of other works which also

found that at the time of weaning risk of diarrhoeal disorders was high due to food contamination (14, 25). Skin infection was found to be one of the major causes of illness among the infants in the study population. This is quite natural, because the household environment in our rural areas is often unhygienic. We observed almost all of the households had kancha floor in their living rooms and were using kancha latrines and the households were overcrowded. Only few infants had the problems of helminthiasis. Possibly, this problem was under-reported due to the reason that we could not perform the stool test for confirmatory diagnosis. However, the skin manifestations of helminthiasis might have come as the problem related to skin. Measles was another common disease among infants under 1 year. Infact, coverage of measles vaccine was lower (62%) compared to the other vaccine coverage, such as BCG coverage was 85%. Another study done in Bangladesh reported that measles had the case fatality rate of 1.3% and also other long term complications like dryness of conjunctiva (26). The lymphatic involvement of gut by measles virus may lead to malabsorption, prolonged diarrhoea and malnutrition.

Low socioeconomic condition, illiteracy of the parents, and poor living condition might be linked with infant morbidity. This finding is similar to the findings of by other studies (11,12,13,27). We found high prevalence of morbidities among LBW infants compared to normal and high birth weight infants, but this difference was not statistically significant. The entire population was at risk of high prevalence of morbidity, therefore, attributes of LBW became less prominent. Among infants who received any treatment majority (71%) got allopathic treatment. But, the traditional treatments such as herbal medicine, use of sanctified oil or water, exorcism were also found to be practiced. The main treatment providers were the village doctors. As most of these village doctors are quacks, drug compliance was a big issue. There might be chances of drug resistance through improper use of doses.

We found that quite a large proportion of infants did not receive any treatment due to the perception that "for mild illness treatment is not necessary." However, BRAC is providing some curative services through qualified health personnel in the health centers in rural areas.

CONCLUSIONS

The overall prevalence of illness was high (4.6%) among infants per year. ARI, diarrhoeal disorders, skin infection and measles were the most prevalent morbidities among infants. Low socioeconomic condition, illiteracy of the parents, poor living condition, might be linked with infant morbidity.

RECOMMENDATION

- * Whole community should get health education on prevention, care and danger signs of major illnesses such as ARI and diarrhoea.
- * Provision of sanitary latrines and safe water for household use are essential to prevent diarrhoeal illnesses
- * Health education on personal hygiene and environmental sanitation including improved excreta disposal practices and fly control should be promoted.
- * Mothers should get adequate knowledge of food preparation and food hygiene and they should be advised to give increased and improved diet to infants who suffer from diseases such as measles or recurrent diarrhoea.

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গ্রামাঞ্চলে শিশুদের অসুস্থতার ধরনঃ একটি সমীক্ষা

রুখসানা গাজী, ফজলুল করিম এবং এ এম আর চৌধুরী

ভূমিকা

বিশ্বের বিভিন্ন দেশের গবেষণায় দেখা গেছে যে, জন্ম-ওজন কম হওয়া শিশু মৃত্যু এবং অসুস্থতার একটি প্রধান কারণ। তাছাড়া গবেষণায় আরো দেখা গেছে, কম জন্ম-ওজন শিশুর শারীরিক ও মানসিক অবস্থার উপর দীর্ঘমেয়াদী ও ক্ষতিকর প্রভাব ফেলে। এই সমস্ত দীর্ঘমেয়াদী ও ক্ষতিকর প্রভাবের কারণে কর্মদক্ষতা ও কর্মক্ষমতা হ্রাস পায়। ফলে জীবনযাত্রার মান হয় নিম্নমুখী। অন্যদিকে, মায়ের পুষ্টিহীনতার কারণে জন্ম নেয় কম ওজনের শিশু।

বাংলাদেশে প্রতি বছর যত শিশু জন্ম নেয় তার অর্ধেকই জন্ম নেয় কম ওজন নিয়ে। কিন্তু শিশুর স্বাস্থ্যের উপর কম জন্ম-ওজন কতটুকু প্রভাব ফেলে এ সম্পর্কে খুব কমই আমাদের জানা আছে। তাই শিশুদের অসুস্থতা ও তার চিকিৎসার ধরনের উপর কম জন্ম-ওজনের প্রভাব সমূহ জানার উদ্দেশ্যে মানিকগঞ্জের ৩টি ইউনিয়নে ১৯৯৩-১৯৯৪ সালে এই গবেষণাটি পরিচালিত হয়।

গবেষণার পদ্ধতি

এই গবেষণায় মোট ৬৪৪ জন শিশু অর্ন্তভুক্ত ছিল। এদের জন্ম থেকে শুরু করে তার বয়স ১ বছর হওয়া পর্যন্ত পর্যবেক্ষণ করা হয়েছে। গবেষণার জন্য গর্ভবতীদের চিহ্নিত করা হয় তাদের গর্ভের শেষ ৩ মাসের মধ্যে। প্রতিটি গর্ভবতীর বাড়ির ১ জন প্রাপ্ত বয়স্ক ব্যক্তিকে নির্বাচন করা হয়েছিল, যিনি শিশুর জন্মের সাথে সাথে ব্র্যাকের মাঠ পর্যায়ের গবেষণা অফিসে সংবাদ দিয়েছেন। জন্ম গ্রহণ করার ৪৮ ঘণ্টার মধ্যে শিশুর জন্ম-ওজন নেয়া হয় এবং ঐ শিশুকে তার বয়স ১ বছর হওয়া পর্যন্ত প্রতিমাসে ১ বার করে ফলো-আপ করা হয়। প্রতিটি ফলো-আপের সময় শিশুর অসুস্থতা ও তার চিকিৎসা সম্পর্কে নির্ধারিত ফরমে তথ্য সংগ্রহ করা হয়।

ফলাফল

গবেষণায় দেখা গেছে যে, জন্মের পর ১ বছরের বয়স পর্যন্ত প্রতিটি শিশু গড়ে ৪.৬ বার অসুস্থ হয়েছে। শ্বাসনালীর সংক্রমণ, ডায়রিয়া, চর্মের সংক্রমণ ও হাম এই সকল অসুস্থতায় শিশুরা সবচেয়ে বেশি ভুগেছে। জন্মের পর প্রথম ৪ মাসের তুলনায় ৫-১২ মাস বয়সে শিশুরা ডায়রিয়াজনিত অসুস্থতায় বেশি ভুগেছে। শিশুদের অসুস্থতার সাথে পরিবারের দারিদ্র্য, পিতা-মাতার অশিক্ষা, বসত ঘরের পাকা মেঝে ও স্যানিটারী ল্যাট্রিনের অভাব ইত্যাদি সম্পর্কযুক্ত বলে প্রতীয়মান হয়েছে। বসতবাড়ির ঘরের সংখ্যার সাথেও শিশুদের অসুস্থতার সম্পর্ক দেখা গেছে। শিশুরা ১ বছরে মোট যতবার অসুস্থ হয়েছে তার শতকরা ৩৬ ভাগ ক্ষেত্রে কোন চিকিৎসা পায়নি। যে সকল শিশুরা অসুস্থতাকালীন সময়ে চিকিৎসা পেয়েছে, তাদের মধ্যে শতকরা ৭১ ভাগ এলোপ্যাথি চিকিৎসা পেয়েছে। প্রধান চিকিৎসা প্রদানকারী ছিলেন গ্রাম্য চিকিৎসক। চিকিৎসা না নেওয়ার প্রধান কারণ হিসাবে মায়েরা উল্লেখ করেছেন যে, “অল্প অসুখের জন্য চিকিৎসার প্রয়োজন নেই।”

সুপারিশসমূহ

এই গবেষণায় অর্জিত শিশুরা যেসকল অসুখে সবচেয়ে বেশি ভুগেছে তন্মধ্যে শ্বাসনালীর সংক্রমণ ও ডায়রিয়া অন্যতম। এই অসুখগুলোর জটিলতা সম্পর্কে সমাজের সকলকে জানাতে হবে, যাতে অসুখগুলোর দ্রুত চিকিৎসার ব্যবস্থা করা সম্ভব হয়। ডায়রিয়া প্রতিরোধে স্যানিটারী ল্যাট্রিন ব্যবহারে উৎসাহিত করা এবং বসতবাড়ির ও ব্যক্তিগত পরিষ্কার-পরিচ্ছন্নতার উপর সকলকে সচেতন করে তুলতে হবে। সেইসাথে শিশুদের জন্য খাবার প্রস্তুত করার সময় পরিষ্কার-পরিচ্ছন্নতা বজায় রাখার ব্যাপারে মায়াদেরকে আরো সচেতন করে তুলতে হবে। যেসকল শিশু বার বার ডায়রিয়ায় ভুগছে ও যারা হামে আক্রান্ত হচ্ছে তাদের অসুখ সেরে যাওয়ার পরও পুষ্টির খাবার খাওয়াতে হবে যাতে দ্রুত শরীরের ক্ষয়পূরণ হয়।