Neonatal Morbidity and Care-seeking Behaviour in Rural Bangladesh

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Summary

The present study was undertaken to assess the pattern of reported neonatal morbidity and the care-seeking behaviour for neonates in rural Bangladesh. Data were collected from 1511 women who had live births during January 1996–August 1998 in four rural subdistricts, which are the field sites of the Operations Research Project of the International Centre for Diarrhoeal Disease Research, Bangladesh. A structured questionnaire was used to collect information from the mothers who were interviewed in their homes. Forty-nine per cent of the neonates were reported to have suffered from some kind of morbidity. Fever was the most common morbidity reported in the study population (21 per cent), followed by breathing difficulty (11 per cent). Birth order, complications during pregnancy, and/or delivery and death of a sibling were found to be significantly associated with reported neonatal morbidity. Eighty-seven per cent of the mothers sought care for their newborns. Some were taken to several different providers, the commonest being homeopaths (38 per cent) and village doctors (37 per cent). Seventeen per cent were taken to trained providers, and only 5 per cent to government health facilities. Seeking care from trained providers was found to be associated with the gender of the neonate, birth order, antenatal care of the mother from trained providers, father's education and monthly expenditure of the family. The results of this study suggest that efforts should be made to raise community awareness regarding neonatal morbidity, the importance of seeking care from trained personnel and the availability of services for these conditions.

Introduction

Neonatal mortality in developing countries is extremely high at approximately 36 per 1000 live births compared to about 5 per 1000 live births in the more developed countries.[1] During the past few years, there has been a significant decline in infant mortality in Asia because of sharp reductions in deaths due to polio, neonatal tetanus, and other vaccine preventable diseases.[2] In Bangladesh, the neonatal mortality rate is 48.4 per 1000 live births, which is higher in rural areas at 52 per 1000 live births.[3,4] The risk of infant deaths during the first month of life is greater than that during the next 11 months, as reported in the Bangladesh Demographic and Health Survey 1996–97.[3]

In Bangladesh, data on neonatal morbidity is limited. Although morbidity rates have been determined by the Bangladesh Bureau of Statistics[5] for different age groups, the rates for neonates have not been determined. Neonatal morbidity can vary between urban and rural areas, hospital and the community.[6] Hospital-based data in the country show that birth asphyxia, septicaemia, neonatal jaundice, low birthweight, birth trauma, acute respiratory infection (ARI), and seizures are the most common neonatal conditions requiring admission.[7]

Few studies have looked into neonatal morbidity in the community in Bangladesh. Also, apart from maternal tetanus immunization there is hardly any programme directed specifically for neonates. Respiratory infection, thrush, skin infection, umbilical infection, and conjunctivitis have been reported to cause considerable morbidity and mortality in the newborns in two subdistricts of Bangladesh.[8,9] Regarding care-seeking, in Bangladesh the ideal treatment for very young infants, particularly neonates with acute respiratory tract infection is perceived to be spiritual rather than medical; allopathic medicine being associated with rapid

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worsening of symptoms.[10] A number of external constraints have been reported to deter women from seeking care for their children. The commonest is the absence of supportive family members who can take over household chores, and the existence of the tradition of 'purdah' which prevents them from seeking treatment outside the immediate neighbourhood.[10] Findings from a study conducted in four selected districts show that almost 50 per cent of the neonates were found to have suffered from some kind of morbidity and most were taken to unqualified providers.[11] While this study has reported on the types of providers, it has not looked into the factors associated with care-seeking from trained providers. There is a paucity of information regarding the association of different sociodemographic variables with neonatal morbidity. Such information is necessary for designing programmes for neonatal health.

This study was carried out to assess the patterns of reported neonatal morbidity, the care-seeking behaviour for neonates and the correlates of care-seeking.

Subjects and Methods

The study was conducted in four rural subdistricts of Bangladesh, two each in Chittagong and Jessore districts. These subdistricts are the field sites of the Operations Research Project (ORP) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). Chittagong is located in the south-east of the country. It has a literacy rate of 47 per cent (BBS, 1996c), and the people rely primarily on farming and small business for their livelihood. Jessore is located in the south-west of the country. The literacy rate is 37 per cent (BBS, 1996c), and most of the men are employed as labourers in mills and factories.

This was a cross-sectional study which collected data from 1511 mothers who had live births during January 1996–August 1998. Mothers were identified from the Sample Registration System (SRS), a longitudinal data-collection system which operates in the field sites of the Project. The SRS, during the study period, collected data every 2 months on health and demographic events of the population. Every sixth household in the study area in Jessore and every fourth household in the study area in Chittagong, constituting a total of 10642 households, were visited. A structured questionnaire was used for collecting information from the mothers who were interviewed in their homes by trained female interviewers. Data for newborns not having completed the neonatal period at the time of interview was collected during the next round. A recall period of up to 2 months was used. The interviewers were supervised by the Field Research Officers and Medical Officers of the Project. Information was obtained from the mothers on morbidity experienced by the newborns within 1 month of birth and on subsequent use of health services. Information regarding care sought from providers, such as doctors, nurses, paramedics and the available government facilities (considered trained providers), or any village practitioner, such as untrained village doctors, homeopaths, herbalists and spiritual healers (considered medically unqualified), was also obtained from the mother. The same information was also collected from mothers whose newborns were not alive at the time of interview. However, the study did not obtain information on the causes of death.

Information on monthly expenditure from the households was collected by the Project 2 years before the present study. This information was available for only 1057 families of the present study. This was mainly because many of the extended families had split to become nuclear families and there was also some in-migration from which this information was not collected.

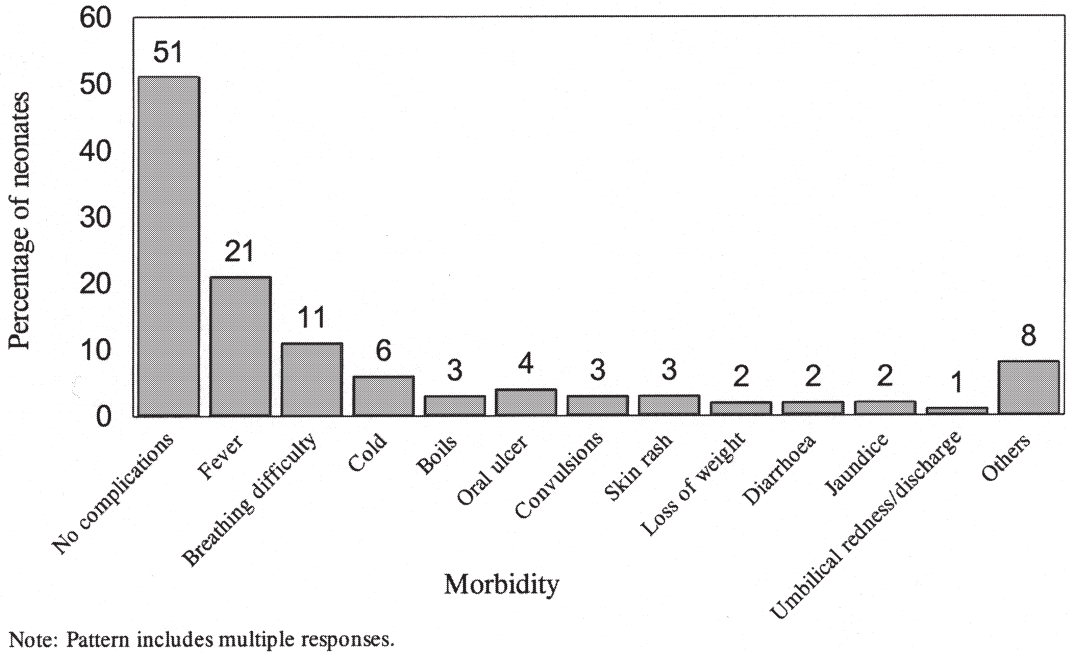
Both bivariate and multivariate analyses were done. Logistic regression models were used to assess the effects of sociodemographic factors on neonatal morbidity and care-seeking.

For the purpose of this study, an unprompted reporting by the mother of any of the following was considered to be a morbid event for the neonate: breathing difficulty, fever, convulsion, diarrhoea, boils, jaundice, redness/discharge from the umbilicus, loss of weight, oral ulcer, cold ('thanda laga' which is the local terminology used when a person catches a cold), and rash reported among infants within 0–28 days of age. 'Others', as reported in this study, included constipation, suppression of urine, blue extremities, abdominal distension and discharge from the eye. Unprompted responses only have been considered in this study as prompted responses may lead to over-reporting.

Characteristics of the study population

Nearly half (49 per cent) of the neonates were female. One-third were first borns, two-fifths (40 per cent) were either second or third births, and a quarter (26 per cent) had a birth order of 4 or more. More than three-quarters (77 per cent) of the families were Muslims. In half of the cases where information was available, the monthly family expenditure ranged from Tk.2000 to 3999 (1 US$ = 48.5 taka); it was less than Tk.2000 in 26 per cent and Tk.4000 or more in 24 per cent of the families. The mean age of the mothers was 25 years. The mean years of schooling of the mothers and fathers were 3.4 and 3.5, respectively. Forty-four per cent of the mothers and 45 per cent of the fathers had no schooling, while about one-third of the mothers (29 per cent) and fathers (28 per cent) had 1–5 years of schooling. Another 27 per cent of both fathers and mothers had more than 5 years of schooling.

Twenty-five per cent of the neonates had a history



Note: Pattern includes multiple responses.

FIG. 1. Patterns of reported neonatal morbidity in the study population (n = 1511).

of death of a sibling . Forty-two per cent of the mothers had received antenatal care (ANC) from trained personnel and also the same proportion of the mothers reported history of complications during pregnancy and/or delivery (bleeding, oedema of face and legs, severe headache, blurring of vision, convulsions, leaking membrane, premature rupture of the membrane, prolonged labour and malpresentation).

Results

Patterns of reported neonatal morbidity

Nearly half (49 per cent) of the neonates in the study were reported by their mothers to have a morbid condition. Fever (21 per cent) was the most common (Fig. 1), followed by breathing difficulty (11 per cent). Six per cent were reported to have had a cold ('thanda laga'). Further analysis showed that about 6 per cent had fever or cold associated with breathing difficulty. About 8 per cent had other complications which included constipation, suppression of urine, blue extremities, abdominal distension and discharge from the eyes. Morbidity was slightly higher among the male neonates (50 per cent) than among the females (48 per cent). However, no major difference in the types of morbidity was observed between the male and female neonates.

Care-seeking

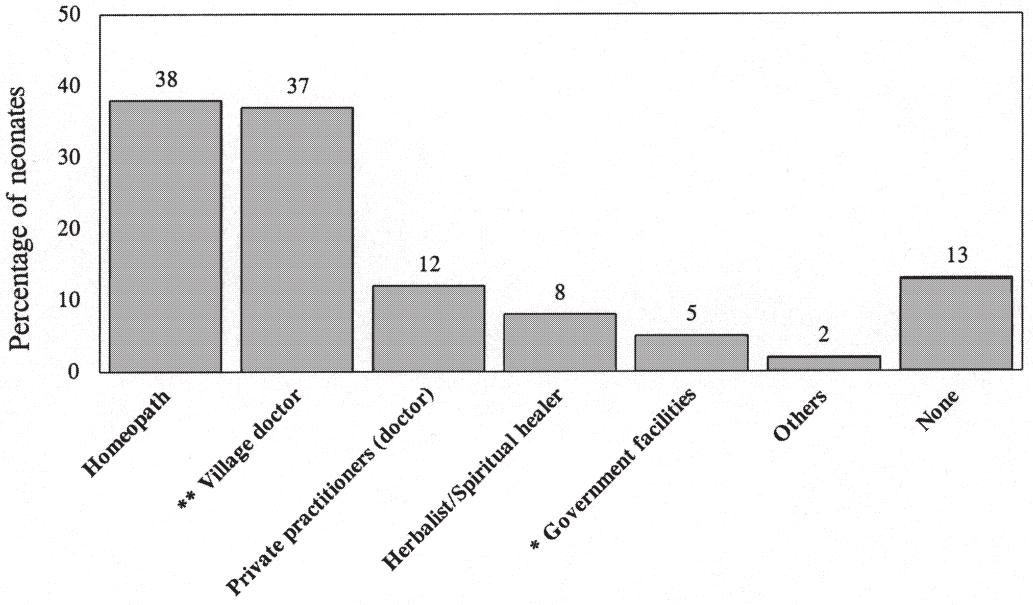
Care was sought for about 87 per cent of the neonates who had problems, but less than a fifth were taken to trained providers (Fig. 2). For those who had problems, homeopaths were consulted in 38 per cent of the cases, and 37 per cent were taken to village doctors. Only 5 per cent of the cases were taken to government health facilities, such as the Health and Family Welfare Centre (HFWC), the Satellite Clinic (SC), the Thana Health Complex (THC) and the district hospital. About 12 per cent were taken to private medical practitioners.

Among those for whom care was sought, 83 per cent were taken to a single provider and 17 per cent to multiple providers.

Care sought from the trained providers, particularly doctors, was found to be greater by 7 percentage points for male neonates in comparison to the females ($p < 0.01$). Also, care from any provider other than the herbalist/spiritual healer was sought for a greater proportion of male neonates (Fig. 3).

Providers by type of neonatal morbidity

As shown in Table 1, no care was sought for over a fifth of the neonates (22 per cent) reported to have umbilical redness or discharge. Also, no care was sought for nearly a fifth (18 per cent) of the neonates reported to have convulsions, and for over a third of



* Government facilities include HFWC/SC/THC/District Hospital
** Village doctors are untrained practitioners selling allopathic medicine
Note: Multiple responses allowed

FIG. 2. Types of providers/facilities used for neonatal morbidity (n = 740).

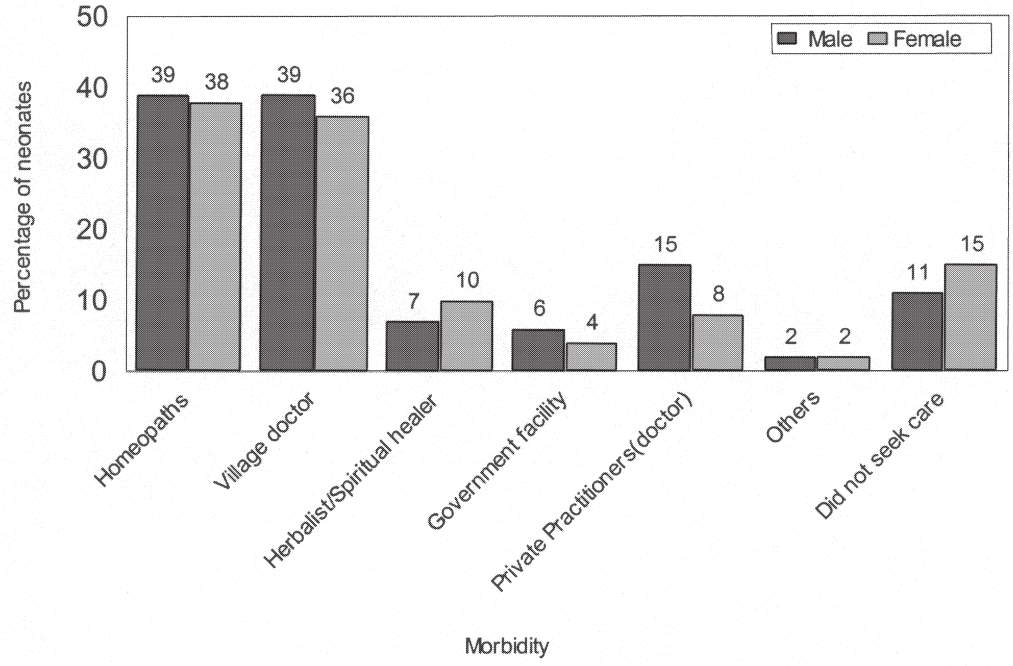


FIG. 3. Types of providers/facilities used by gender of neonate (n = 377 male and 346 female).

TABLE 1
Providers by type of neonatal morbidity

Type of morbidity	Did not seek care (%)	Government facility (%)	Private practitioners (doctors) (%)	Medically unqualified (%)
Breathing difficulty	8	11	16	78
Breathing difficulty with cold/fever	2	10	16	87
Boils	13	7	9	77
Jaundice	8	–	7	90
Umbilical redness/discharge	22	–	33	78
Convulsion	18	5	13	71
Fever	9	6	12	82
Diarrhoea	3	10	18	88
Loss of weight	8	8	16	74
Oral ulcer	6	6	4	87
Cold	13	6	10	78
Skin rash	34	–	8	63

Multiple responses were allowed.

TABLE 2
Percentage distribution of cost by places/providers

Cost (in taka)	HFWC/SC (n = 13)	THC/Dist. hospital (n = 24)	Homeopath (n = 261)	Herbalist/spiritual healer (n = 53)	Village doctor (n = 259)	Private practitioner (doctor) (n = 83)
No cost	46	–	2	19	2	1
1–50	31	4	84	55	39	15
51–100	23	17	9	15	26	23
101–500	–	54	5	11	31	43
501–1000	–	21	–	–	1	11
1001–2000	–	4	–	–	1	7

those having skin rash. In almost 80 per cent of the cases, care was sought from medically unqualified personnel for most of the morbidities. Trained providers were used more for umbilical redness or discharge, diarrhoea, breathing difficulties, and loss of weight.

Decision-makers for seeking care

The major decision-maker for seeking care of the newborn was the father (62 per cent). Mothers were the decision-makers in only 16 per cent of the cases, while the paternal grandmother and other relatives decided in 16 and 9 per cent of cases, respectively.

Cost of treatment

The average cost of treatment was Tk.191 (about US$4) for each neonate. However, the average amount spent for male neonates was greater (Tk.203) than that spent for female neonates (Tk.171). The difference was found to be significant ($p < 0.00$).

As shown in Table 2, about 46 per cent of the cases going to the HFWC and the SC received free treatment; the rest spent between Tk. 1 and 100. The majority (54 per cent) who visited the THC and private medical practitioners (43 per cent) paid between Tk.101 and 500, while most of the cases seeking care from homeopaths (84 per cent), herbalists (55 per cent), and village practitioners (39 per cent) spent between Tk. 1 and 50.

Of the 1511 live births in this study, 97 died during the neonatal period. Of these, no care was sought for 48 per cent, trained providers were consulted for 15 per cent of the cases, while the rest were taken to untrained providers.

Correlates of neonatal morbidity: multivariate analysis

Results of logistic regression (Table 3) showed that complications during pregnancy and/or childbirth were significantly associated with increased morbidity ($p < 0.01$). History of death of a sibling ($p < 0.01$) and the first birth order ($p < 0.05$) were also significantly associated with increased reported morbidity. No statistically significant association was found with the sex of the newborn, mother's age or education,

TABLE 3
Odds ratio for factors associated with reported neonatal morbidity (n = 1377)[a]

Variable	Odds ratio	95% Confidence interval
Mother's education (in years)		
0 (RC)	1.00	–
1–5	0.84	0.64, 1.12
6+	0.77	0.56, 1.08
Father's education (in years)		
0 (RC)	1.00	–
1–5	1.08	0.83, 1.41
6+	1.10	0.81, 1.48
Mother's age		
< 20 (RC)	1.00	–
20–29	1.10	0.79, 1.52
30+	1.45	0.91, 2.33
Sex of neonates		
Female (RC)	1.00	–
Male	1.13	0.91, 1.40
Religion		
Non-Muslim (RC)	1.00	–
Muslim	1.04	0.80, 1.34
Complications during pregnancy and/or delivery		
No (RC)	1.00	–
Yes	1.87**	1.49, 2.35
History of death of a sibling		
No (RC)	1.00	–
Yes	1.55**	1.16, 2.07
Birth order		
First (RC)	1.00	–
2–3	0.89	0.66, 1.21
4 or more	0.66*	0.42, 1.02
Monthly family expenditure		
< 2000 (RC)	1.00	–
2000–3999	0.94	0.69, 1.30
4000+	1.12	0.76, 1.66
Unknown	1.12	0.79, 1.59
Types of birth attendants		
Untrained (RC)	1.00	–
Trained	1.21	0.94, 1.57

RC = Reference category. *p = < 0.05; **p = < 0.01
[a] Information available for all variables.

TABLE 4
Odds ratio for factors associated with care-seeking from trained providers for neonatal morbidity (n = 679)[a]

Variable	Odds ratio	95% Confidence interval
Mother's education (in years)		
0 (RC)	1.00	–
1–5	0.77	0.43, 1.40
6+	1.02	0.54, 1.96
Father's education (in years)		
0 (RC)	1.00	–
1–5	2.32**	1.34, 4.03
6+	1.49	0.80, 2.78
Mother's age (in years)		
< 20 (RC)	1.00	–
20–29	1.79	0.97, 3.29
30+	1.39	0.53, 3.67
Sex of neonates		
Female (RC)	1.00	–
Male	2.04**	1.29, 3.22
Religion		
Non-Muslim (RC)	1.00	–
Muslim	1.10	0.65, 1.88
ANC from trained personnel		
No (RC)	1.00	–
Yes	2.07**	1.30, 3.31
History of death of a sibling		
No (RC)	1.00	–
Yes	0.93	0.52, 1.65
Birth order		
First (RC)	1.00	–
2–3	0.75	0.43, 1.34
4 or more	0.70*	0.25, 1.70
Monthly family expenditure (in taka)		
< 2000 (RC)	1.00	–
2000–3999	1.62	0.74, 3.56
4000+	2.54*	1.08, 5.97
Unknown	2.49*	1.12, 5.52
Types of birth attendants		
Untrained (RC)	1.00	–
Trained	1.06	0.65, 1.72

RC = Reference category. *p = < 0.05; **p = < 0.01
ANC from trained personnel = antenatal care from doctor, nurse, or paramedic.
[a] Had complications and information for all variables available.

father's education, type of birth attendant, or monthly family expenditure.

Correlates of care-seeking from trained providers: multivariate analysis

As shown in Table 4, there was a significantly greater likelihood of seeking care from trained providers for the male neonates ($p < 0.01$). Mothers who received antenatal care from trained providers were more likely to seek care from the trained providers for their sick neonates than those who did not receive such care ($p < 0.01$). Also, the families with a monthly expenditure of Tk. 4000 or more were more likely to seek care for their newborns than families with a monthly expenditure of less than Tk. 2000 ($p < 0.05$). However, as shown in Table 4, the group for which information on monthly expenditure was not available were also more likely to seek care from trained providers for their newborns.

There was also a lesser likelihood of seeking care from trained personnel for newborns belonging to the fourth or higher birth order. Seeking care from trained providers was significantly associated with father's schooling of 1–5 years. Mother's education, however, did not have any significant association.

Discussion

This study assessed the reported patterns and care-seeking behaviour for neonatal morbidity in rural Bangladesh. Medical validation for the morbidity reported was not done in this study. The information on disease prevalence is largely subjective, being dependent on what symptoms mothers considered serious. However, about half of the neonates were reported to have suffered from some kind of morbidity. This is comparable with the findings reported from a different area of the country.[11]

The study showed that among the neonates, fever followed by breathing difficulty was the most common morbidity. Acute respiratory infection (ARI) is a common childhood illness in Bangladesh. Almost one-fifth of infants less than 6 months old are reported to have ARI.[3] In this study, 6 per cent of the neonates had cold or fever associated with breathing difficulty. These were presumably cases of ARI.

In this study, complications of the mother during pregnancy and/or delivery, and death of a sibling were significantly associated with increased morbidity of the newborns. This is supported by the findings reported by Alam.[12] This indicates that neonates belonging to families with a history of death in siblings are vulnerable and merit special emphasis in programmes for neonatal care. Various studies have found the male gender to be a risk factor for morbidity.[13,14] This study also shows the same pattern. With the predominance of male child preference in rural Bangladesh,[15,16] it could be that women reported more morbidity for male neonates than for female neonates. It was also observed that morbidity was greater among the neonates who belonged to the first birth order. The first birth order has been associated with increased neonatal morbidity and mortality in different studies.[3,13,17] The mother's inexperience in child-rearing practice could be an explanation in this regard.

The rural healthcare-delivery system in the country consists of a Health and Family Welfare Centre and Satellite Clinics at the village level, where service is provided by paramedics and field workers. At the subdistrict level, the Thana Health Complex is the first referral hospital where services are provided by doctors. Childcare facilities are available at all these levels. Despite this infrastructure, healthcare seeking behaviour in this study was not encouraging. The majority of mothers were found to consult unqualified practitioners (village doctors and homeopaths) for their neonates. Village doctors are untrained practitioners selling allopathic medicine. Homeopathic medicine is believed to be mild, slow in action with no side-effects, and considered specially suitable for children because of their sweet taste and ease of administration.[18] Lower charges by homeopathic practitioners may be another reason for consulting them. As most of the mothers sought care from untrained village practitioners they could be considered for training on timely referral of sick neonates to appropriate facilities for better management.

It was further observed that although the government health facilities are free, their utilization was poor. This warrants further investigation. One encouraging finding from this study reveals that women who received antenatal care from trained personnel sought more care from the trained providers for their sick newborns than the women who did not receive such care. Similar findings have been reported by Rahman, *et al.*,[19] where previous visits to the HFWC and SC was associated with seeking antenatal care. Thus, previous exposure to and/or knowledge of the availability of healthcare facilities may lead to increased care of newborns from trained personnel. It is, therefore, important to raise community awareness about the availability of healthcare facilities and the importance of using these.

A sex differential for seeking care was noted in the present study; care was sought for a greater proportion of male neonates than female neonates. Seeking care from the trained provider was also greater for the male neonates, and the average expenditure for treatment of the male neonates was more than that for the female neonates. Such gender bias has also been reported in other studies.[14,20,21] The solvent families were found to report more morbidity and to seek more care for their neonates. The greater reporting of morbidity in this group could be due to differences in perception of morbidity. Analysis showed that the group for which information regarding monthly expenditure was not available were also more likely to seek care from trained personnel for their neonates. This group may have had higher monthly expenditure.

Care-seeking from trained providers was found to be associated with the father's education. The present study did not find any such association with the mother's education. The husband was the principal decision-maker for seeking care for neonates in this study, which is comparable to the findings of another study by Ahmed, *et al.*[22] This role of the husband could have overshadowed the effect of maternal education on care-seeking for neonates.

It is suggested that efforts should be made to raise community awareness regarding neonatal morbidity, the importance of seeking care from trained personnel, and the availability of services for these conditions.

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