

Changing health-seeking behaviour in Matlab, Bangladesh: do development interventions matter?

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It is generally assumed that socioeconomic development interventions for the poor will enhance their material and social capacities to prevent ill health and to seek appropriate and timely care. Using cross-sectional data from surveys undertaken in 1995 and 1999 as part of the BRAC-ICDDR,B Joint Research Project in Matlab, Bangladesh, this paper explores patterns of health-seeking behaviour over time, with the hypothesis that exposure to integrated socioeconomic development activities will enhance gender equity in care-seeking and the use of qualified medical care. While there is tentative evidence of greater gender equity in treatment choice among households benefiting from development interventions, a preference for qualified medical care is not apparent. Findings reveal a striking and generalized rise in self-treatment over the 4-year period that is attributed to the economic repercussions of a major flood in 1998, and greater health awareness due to the density of community health workers in Matlab. Also noteworthy is the substantial reliance on informal and often unqualified practitioners (over 20%) such as pharmacists and itinerant drug sellers. Factors associated with the type of health care sought were identified using logistic regression. Self-care is associated with female gender, the absence of low cost health services and illnesses of relatively short duration. Medical care, on the other hand, is positively predicted by male gender, geographic location, greater socioeconomic status and serious illness of long duration. The paper concludes by emphasizing the importance of enhancing local capacities to determine whether self-treatment is indicated, to self-treat appropriately, or in cases where health care is sought, to judge provider competence and evaluate whether treatment costs are justified. The provision of pharmaceutical training to the full spectrum of health care providers is also recommended.

Key words: health-seeking behaviour, micro-credit, self-treatment, Bangladesh, BRAC

Introduction

In Bangladesh, a host of non-governmental (development) organizations (NGOs) have organized to improve the health and livelihood of the poor through the support of integrated multi-sectoral development activities such as women's micro-credit, life-skill training and non-formal education. One of the assumptions underlying these activities is that increased income and awareness arising through involvement in socioeconomic development programmes will improve health by enhancing the capacity of the poor to seek appropriate and timely care (World Bank 1993). A second assumption is that women's participation in these programmes will increase gender equity in health care access and outcomes (World Bank 1993, 2001). To date, however, a systematic examination of the validity of these assumptions is lacking in the published literature.

The poor in Bangladesh are disadvantaged in accessing quality health care due to their marginalized position in society. In order to make the existing health-care delivery system more pro-poor, knowledge of their health-seeking behaviour is needed. Health-seeking behaviour is any activity undertaken by individuals who perceive themselves to have a health problem or to be ill, for the purpose of finding an appropriate remedy (Christman 1977; Ward et al.

1996). It is initiated with symptom definition, whereupon a strategy for treatment action is devised (Christakis 1994). Treatment choice involves a myriad of factors including historical patterns of use, illness type and severity, pre-existing lay beliefs about illness causation, the range and accessibility of therapeutic options and their perceived efficacy, convenience, opportunity costs, quality of service, staff attitudes as well as the age, gender and social circumstances of the sick individual (Kleinman 1980; Young 1981; Kleinman and Gale 1982; Helman 1995; Tipping and Segall 1995; Berman and Dave 1996). Despite the proliferation of studies on health-seeking behaviour in the fields of medical anthropology and health policy and planning, we know surprisingly little about the choices of the poor and how these intersect with age and gender (Bloom and Standing 2001). Moreover, among those studies that have considered health care choice by socioeconomic status, an inconsistent picture emerges due to the complex and context-specific factors that underlie health-seeking behaviour (Tipping and Segall 1995).

Like much of the developing world, medical pluralism, or the existence of several distinct therapeutic systems in a single cultural setting, is an important feature of health care in Bangladesh (Ahmed 1993). Indeed, a decline in the percentage of acute illness treated in the public health sector, from 20% in 1984 to only 12% in 1995, suggests that medical

pluralism may be increasing (Begum 1996). In this context, it is important to consider the nature and implications of changing care-seeking practices for the most vulnerable, and to investigate whether development programmes that purportedly strengthen their economic and social capabilities, are also supporting safe, appropriate and equitable treatment in the case of illness.

Using cross-sectional data from households surveyed in 1995 and 1999 as part of the BRAC-ICDDR,B Joint Research Project in Matlab thana, this paper explores trends in health-seeking behaviour over time, and the particular influence of multi-sectoral development programmes for the poor. Specifically, we propose that participation in such programmes will increase informational and material resources for preventive and therapeutic health care, and support their equitable distribution between male and female household members. Among beneficiary households, these changes will be manifested in a shift from the use of 'traditional care' and/or advice from informal providers such as pharmacists to use of trained medical professionals, and greater gender equity in treatment seeking.

Materials and methods

BRAC-ICDDR,B Joint Research Project

In 1992, BRAC introduced its Rural Development Programme (RDP) into Matlab thana, a rural sub-district that has been the field station of the ICDDR,B Centre for Health and Population for over 35 years. Renowned for its work on maternal and child health and service delivery, the ICDDR,B has been operating a Demographic Surveillance System (DSS) in Matlab thana (pop. 200 000) since the early 1960s. In one-half of the DSS area the ICDDR,B provides intensive maternal and child health and family planning extension services through community health workers, supported by mid-wives based in four sub-centres (Fauveau 1994).

The largest NGO in Bangladesh, BRAC works in over 60 000 villages and has a total membership of over 3 million families (BRAC 2000). With the dual goals of poverty alleviation and women's empowerment, BRAC undertakes a variety of social and economic development activities including group formation in Village Organizations (VOs), vocational training and the provision of non-formal education and collateral free loans for income-generating activities (Lovell 1992; Chowdhury and Alam 1997). Initiated in 1993, BRAC's Health Programme provides preventive health and nutrition education, as well as immunization, family planning, pregnancy and reproductive health-related care, and basic curative services. Voluntary community health workers (*Shasthya Sebikas*), who are selected from among the women's credit group members and trained in preventive health care, deliver these services by means of regular household visits. Preventive health and nutrition education is also disseminated through a 'health forum' held monthly in each VO and reinforced during household visits (BRAC 1996).

Prior to BRAC's entry into Matlab, a research collaboration

was forged with the ICDDR,B to examine the impact of BRAC's integrated development activities on health and human well-being (Bhuiya et al. 1995). A quasi-experimental research design was developed that sampled 12 000 households from 60 villages representing the DSS area at baseline in 1992, with a post-intervention follow-up survey occurring in 1999 (Ahmed et al. 2001). This larger cohort analysis was supplemented by an in-depth survey of 14 villages in 1995 and 1999 that aimed to capture possible pathways of health change.

The data

For the purposes of this paper, we used data on health-seeking behaviour collected in the sub-sample of 14 villages described above. Sample selection includes three groups of households: BRAC member households, poor non-member households that meet eligibility criteria for BRAC membership (i.e. possess less than 0.5 acres of land and rely on labour-selling activities for more than 100 days per year) and the non-poor. Illness data were solicited from all poor (BRAC eligible) households in the study area, whereas only 50% of the non-poor were included in 1995, and only 25% in 1999. In 1995, a total of 475 BRAC households, 1530 poor non-member households and 950 non-poor households were sampled, which together comprised a sample population of approximately 17 669 persons. In 1999, the sample population of 14 524 individuals was drawn from 400 BRAC households, 1500 poor non-member households, and 420 non-poor households.

The general demographic and socioeconomic data used in analysis were furnished by the head of the household, while specific information on recent household illness and related health-seeking behaviour was provided by the spouse of the household head or any knowledgeable female member of the family. All acute illness episodes occurring among household members during the preceding 2 weeks were elicited and information gathered on symptoms, duration from onset to recovery, if work was affected and whether treatment was sought. Reported symptoms were classified into categories or 'types' of illnesses by means of a pre-tested coding system, and crosschecked by a physician. For example, the reported symptoms of fever and productive cough, and difficulty in breathing were coded as 'pneumonia'. When more than one episode of illness was reported, data were collected with reference to the major illness, i.e. that which had the longest duration. In cases where a health care provider was consulted, additional information was obtained on the type of practitioner and associated costs including service fees, medicine and transportation.

Efforts to improve the reliability and validity of illness reporting included the use of culturally appropriate language, limiting the recall period to 15 days and deploying an independent quality control team to re-survey 5% of the household sample within 3 days of the main survey (Ahmed et al. 2001). In cases where inconsistencies were noted, interviewers were accompanied by field supervisors until quality standards were met. Both prior to and during the survey, all interviewers received rigorous training on questionnaire

content, probing techniques and strategies to establish rapport and neutrality essential to complete and accurate data collection. Finally, both 1995 and 1999 surveys were conducted in the period August to November to control for seasonal variation in the type and prevalence of reported morbidity.

Data on types of health care sought were obtained by asking the respondent about the nature and order of treatment measures undertaken at home or outside the home. These treatments were subsequently grouped into five categories. The category 'self-care' comprises instances where no medication was used and instances in which common home remedies were employed such as ORS. Traditional methods include treatment seeking within faith healing and traditional systems of medicine such as consultation with *kabiraji/hakimi* and homeopathic practitioners (Ahmed 1993). The 'para-professional' category of treatment seeking consists of consultations with: *palli chikitsoks* (village practitioners who receive a year-long training in diagnosing and treating common rural ailments); medical assistants (who complete a 3-year medical programme); and government and non-government community health workers who receive basic preventive and curative health training. The category 'qualified allopaths' comprises licensed practitioners who have undergone professional medical training. Together, para-professionals and qualified allopaths represent formal providers of 'medical care'. The final category, 'informal/unqualified' care comprises itinerant drug sellers, untrained pharmacists and roadside 'quacks' who provide medical advice and treatment with little or no professional training.

Following a short description of the prevalence of morbidity in the sample population and the types of illness experienced, data are analyzed to identify gender and socioeconomic patterns in treatment-seeking comparing 1995 and 1999 for all reported illness episodes. Using logistic regression, multivariate models are then constructed to consider factors associated with the use of self-care and medical care respectively. In the first model, self-care is coded '1' and other types of care are coded '0'. In the model predicting medical care, all instances in which care is received from formally trained para-professionals and allopaths are coded '1', while other types of treatment are coded '0'. Independent variables are identified based on the results of bivariate analysis, their known influence on health-seeking behaviour and their contribution to the reduction of log likelihood. Among the variables included are the age and gender of the ill person, the literacy and gender of the household head, and whether or not the household is located within or outside the embankment – a large system of dams constructed on the banks of the rivers Meghna and Dhonagoda for the purposes of flood control, drainage and irrigation. Households located within the embankment area are presumed to be socioeconomically better-off due to the agricultural benefits of irrigation (Vaughn 1997). Also included are variables indicating whether or not the sick individual belongs to a household participating in BRAC's integrated development programme, and whether or not their community is located in an area in which the ICDDR,B's health-extension services

are provided. A final set of variables indicate the type and duration of the illness experienced.

Results

Prior to the presentation of results, useful context is provided by a brief profile of the prevalence and types of illness experienced by the study population. In 1995, the rate of reported morbidity during the monsoon months of August to October was approximately 15% among BRAC members, 14% among poor non-members and 13% among the non-poor. In 1999, the prevalence of reported illness is slightly higher for both poor (17%) and non-poor (15%) groups. In both 1995 and 1999 women report slightly greater morbidity than men. The profile of illness is also remarkably similar across the study population, with fever being the most common complaint followed by gastrointestinal disorders such as diarrhoea and dysentery, and complaints of aches and pains. In 1999 there is a notable decline in overall rates of fever compared to 1995, and a concomitant increase in complaints of bodily aches and pains, and respiratory problems. As regards the duration of illness, the majority of reported illness episodes lasted between 4 to 7 days (44%). We also note a greater tendency to seek qualified medical care for illnesses exceeding 4 days in duration, and a correspondingly lesser resort to self-care (data not presented here) in both 1995 and 1999 surveys.

Treatment seeking

Study findings indicate that the treatment-seeking patterns of the study population have undergone dramatic change in the 4-year period between surveys. As shown in Table 1, in 1995, less than one-quarter of the sick population managed their illness by self-care, i.e. they did not consult a health care provider for treatment. In 1999, this proportion increased sharply to almost 55%. Concomitant with this rise in self-care is a dramatic and generalized decline in consultations with both traditional and formal medical care practitioners (qualified allopaths, para-professionals etc.). Cross-sectional comparisons also suggest continued reliance on non-qualified medical care for over 20% of illness events, although a slight decline is apparent among BRAC members.

In Table 2 we explore how changes in health-seeking behaviour are reflected in treatment choice for the three most commonly reported types of illness in the study population: fever, diarrhoea/dysentery and aches/pain. Some interesting insights regarding patterns of self-care are yielded by these data. In particular we see that the dramatic rise in self-care noted in 1999 is evident across all common illnesses reported by poor households, but confined to fever and gastrointestinal illness in the non-poor group. With only one exception, we also note a pervasive decline in the use of formal medical care (para-professional and qualified allopathic) across all socioeconomic groups and types of illnesses experienced.

Table 3 compares the results of logistic regression for predicting the odds of self-care in 1995 and 1999. In 1995 the likelihood of self-treatment decreases with increasing age.

Table 1. Health-seeking behaviour by gender, BRAC membership and year of survey (%)

Health care sought in last 15 days	BRAC member households			Poor non-member households			Non-poor non-member households		
	Male	Female	All	Male	Female	All	Male	Female	All
1995									
Self-care	15.7	27.1	22.0	19.9	27.8	24.1	16.6	16.3	16.4
Para-professional	34.8	23.6	28.6	42.3	41.9	42.0	37.4	38.9	38.2
Qualified allopathic	14.8	12.8	13.7	9.0	6.2	7.5	13.4	14.4	14.0
Unqualified allopathic	23.8	27.5	25.9	21.7	15.9	18.6	22.5	21.5	21.9
Traditional*	11.0	8.9	9.8	7.2	8.2	7.7	10.0	9.4	9.4
<i>n</i>	210	258	468	433	485	918	409	535	944
1999									
Self-care	58.0	57.6	57.8	50.6	60.8	55.8	47.3	52.8	50.2
Para-professional	10.7	12.1	11.4	16.8	10.1	13.4	14.0	11.2	12.5
Qualified allopathic	7.7	5.5	6.6	5.2	5.0	5.1	10.7	11.2	10.9
Unqualified allopathic	20.4	23.0	21.6	22.9	19.9	21.3	22.0	20.5	21.2
Traditional*	3.6	1.8	2.7	4.6	4.3	4.4	6.0	4.3	5.1
<i>n</i>	169	165	334	542	564	1106	150	161	311

* includes traditional medicine and homeopathy.

Table 2. Health-seeking behaviour by three most commonly reported illnesses, BRAC membership and year of survey (%)

Health care sought in last 15 days	BRAC member households			Poor non-member households			Non-poor non-member households		
	Fever of all types	Gastro-intestinal disorders	Aches/pain of all types	Fever of all types	Gastro-intestinal disorders	Aches/pain of all types	Fever of all types	Gastro-intestinal disorders	Aches/pains of all types
1995									
Self-care	20.1	21.1	17.9	20.4	28.1	26.9	13.7	22.3	23.7
Para-professional	32.4	28.3	25.6	47.9	38.5	38.7	44.4	33.5	33.9
Qualified allopathic	10.5	12.3	20.5	3.5	9.9	9.7	10.3	12.8	19.5
Unqualified allopathic	33.3	21.9	20.5	22.5	14.1	20.4	24.9	19.1	18.6
Traditional*	3.7	16.7	15.4	5.8	9.4	4.3	6.7	12.2	4.2
<i>n</i>	219	114	39	432	192	93	446	188	118
1999									
Self-care	55.9	70.1	50.8	60.8	54.1	49.0	64.2	56.0	17.2
Para-professional	10.2	3.0	19.0	14.0	12.1	12.4	16.8	12.0	13.8
Qualified allopathic	4.7	1.5	9.5	2.7	5.6	6.2	2.1	8.0	29.3
Unqualified allopathic	27.6	22.4	15.9	20.2	22.1	28.3	14.7	20.0	32.8
Traditional*	1.6	3.0	4.8	2.4	6.1	4.1	2.1	4.0	6.9
<i>n</i>	127	67	63	372	231	145	95	50	58

* includes traditional medicine and homeopathy.

Compared to women, males suffering illness are less likely to self-treat as are sick individuals residing in non-poor and/or male-headed households (men OR 0.74, $p < 0.001$; non-poor OR 0.67, $p < 0.01$; male headed OR 0.74, $p < 0.05$). Illnesses lasting 4 to 7 days are 0.34 times less likely to lead to self-care as opposed to those of shorter duration (OR 0.64, $p < 0.01$). Finally, compared to fever, self-care is more likely to occur in the case of gastrointestinal illness, aches and pains, and skin/eye/ENT conditions (OR 0.47, $p < 0.01$).

In 1999 the association between self-care, age and gender persists whereby older individuals and men are significantly less likely to treat themselves in the event of illness (age OR 0.99, $p < 0.001$; men OR 0.69, $p < 0.01$). Unlike 1995, households living outside the area serviced by the ICDDR,B's

health extension programme are 1.67 times more likely to treat themselves in case of illness, while those located in poor villages outside the embankment are 1.29 times more likely to self-treat. Also striking are differences in the likelihood of treatment according to type of illness experienced. Compared to fever, those individuals suffering from aches and pains, respiratory illness and skin/eye/ENT conditions are significantly less likely to self-treat.

Table 4 explores factors predicting whether (or not) any type of formal medical care (i.e. para-professionals and qualified allopaths) is sought in the case of illness. Results from 1995 indicate a slight yet significant association between increasing age and use of qualified medical care. As might be expected, men are 1.23 times more likely to seek formal

Table 3. Odds ratios of managing illness by self-care

Characteristics	Odds of managing illness by self-care					
	1995			1999		
	Odds	Lower CI	Upper CI	Odds	Lower CI	Upper CI
Age (years)	0.99**	0.984	0.997	0.99***	0.984	0.996
Sex						
Female	1.00			1.00		
Male	0.69***	0.470	0.909	0.69***	0.488	0.892
Sex of household head						
Female	1.00			1.00		
Male	0.74*	0.458	1.022	-0.91	-1.173	-0.647
Literacy of household head						
Illiterate	1.00			1.00		
Literate	0.88	0.653	1.107	-0.91	-1.122	-0.698
Location of the household						
Inside embankment	1.00			1.00		
Outside embankment	0.93	0.701	1.159	1.29*	1.069	1.511
Village health extension services						
Yes	1.00			1.00		
No	0.85	0.623	1.077	1.67***	1.450	1.889
BRAC membership status						
Poor non-member	1.00			1.00		
BRAC member	0.88	0.598	1.162	1.09	0.829	1.351
Non-poor non-member	0.67**	0.415	0.925	0.82	0.544	1.096
Duration of illness						
≤3 days	1.00			1.00		
4–7 days	0.34***	-0.097	0.777	0.74**	0.511	0.969
>7 days	0.76	0.417	1.103	0.71**	0.439	0.980
Categories of illness						
Fever of all types	1.00			1.00		
Gastrointestinal illness	1.47**	1.196	1.744	0.83	0.548	1.112
Aches and pain	1.57	1.211	1.929	0.55***	0.242	0.857
Respiratory illnesses	0.94	0.442	1.438	1.26	0.954	1.566
Skin/Eye/ENT related illnesses	1.62*	1.149	2.090	0.48***	0.057	0.903
Others	1.14	0.773	1.507	0.60**	0.214	0.986
-2 log likelihood	2145.62			2248.34		
Model improvement	90.43***			156.33***		
Overall predicted	79.5%			63.1%		
n	2209			1748		

Significance levels * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

medical care than women ($p < 0.05$). Less intuitive is the finding that sick individuals who reside in poorer villages outside the embankment are more likely to seek formal medical care (OR 2.19, $p < 0.001$). Similarly perplexing, we find that the probability of seeking formal allopathic treatment is significantly predicted by BRAC membership but in the opposite direction than was hypothesized, with BRAC member households 0.67 times less likely to utilize formal medical care than poor non-members. In 1999, substantial changes in the predictors of medical care are apparent. Unlike 1995, the non-poor report a greater likelihood of seeking care from formal medical providers (OR 1.48, $p < 0.05$), whereas BRAC members are neither more nor less likely to use medical care than poor non-members. Also distinctive in 1999 is that residence in relatively poorer communities located outside the embankment negatively predicts the use of formal medical care (OR 0.56, $p < 0.000$). Consistent with findings from 1995, the likelihood of seeking formal medical care is positively predicted by illness of 4 or

more days in duration (4–7 days OR 1.58, $p < 0.01$; 7 + days OR 1.78, $p < 0.001$). Compared with fever, those reporting aches/pains and skin/eye/ENT and other complaints are also significantly more likely to seek care from formally trained medical providers.

Discussion

This cross-sectional analysis of differences in health-seeking behaviour over time indicates dramatic changes in behaviour that are inadequately explained by exposure to an integrated development programme. Prior to discussing these results, however, several limitations warrant mentioning. First, we note that measures of health-seeking behaviour were based on reported illness and treatment action, and not directly observed as the illness process unfolds. By limiting the recall period to the past 15 days, and focusing on the major morbid experience, attempts were made to minimize problems of inaccurate recall arising from our use of retrospective

Table 4. Odds ratios of seeking formal medical treatment for illness (para-professional and qualified allopathic)

Characteristics	Odds of seeking medical treatment					
	1995			1999		
	Odds	Lower CI	Upper CI	Odds	Lower CI	Upper CI
<i>Age (years)</i>	1.01**	1.006	1.014	1.00	0.994	1.006
<i>Sex</i>						
Female	1.00			1.00		
Male	1.23*	1.054	1.406	1.39**	1.141	1.639
<i>Sex of household head</i>						
Female	1.00			1.00		
Male	0.75*	0.505	0.995	1.39	1.045	1.735
<i>Literacy of household head</i>						
Illiterate	1.00			1.00		
Literate	1.20	1.016	1.384	-0.81	-1.077	-0.543
<i>Location of the household</i>						
Inside embankment	1.00			1.00		
Outside embankment	2.19**	2.000	2.380	0.56***	0.286	0.834
<i>Village Health Extension services</i>						
Yes	1.00			1.00		
No	0.81*	0.624	0.996	0.77	0.496	1.044
<i>BRAC membership status</i>						
Poor non-member	1.00			1.00		
BRAC member	0.67***	0.431	0.909	1.03	0.699	1.361
Non-poor non-member	0.97	0.766	1.174	1.48*	1.150	1.809
<i>Duration of illness</i>						
≤3 days	1.00			1.00		
4–7 days	2.05***	1.705	2.395	1.58**	1.284	1.876
>7 days	1.72***	1.410	2.030	1.78***	1.443	2.117
<i>Categories of illness</i>						
Fever of all types	1.00			1.00		
Gastrointestinal illness	0.87	0.643	1.097	0.93	0.558	1.302
Aches and pain	0.87	0.568	1.172	1.66**	1.295	2.025
Respiratory illnesses	1.07	0.686	1.454	0.85	0.452	1.248
Skin/Eye/ENT related illnesses	0.64	0.207	1.073	1.70*	1.218	2.182
Others	0.83	0.536	1.124	1.62	1.175	2.065
-2 log likelihood	2942.09			1617.24		
Model improvement	118.206***			96.661***		
Overall predicted	60.6%			80.5%		
n	2209			1748		

Significance levels * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

records. Given evidence from rural Kenya that there is a 60% under-reporting of self-medication when a recall period of 2 weeks is used (Schulpen and Swinkels 1980), it is likely that an under-reporting of minor illnesses occurred, especially for common conditions that go untreated or are routinely dealt with by means of self-care.

A second limitation relates to the possible effect of illness stage on treatment choice; that more advanced illness may be treated differently than early stage disease where home and folk remedies may initially suffice (Mwenesi 1993). Fortunately, the cross-sectional nature of the study, and the inclusion of all reported illness occurring in the previous 2 weeks irrespective of severity, helps obviate the potential confounding influence of illness stage in analysis.

Third is the issue of selectivity bias, i.e. the concern that differences between BRAC households and poor non-member households are not solely the result of programme

effects but are due to unmeasured characteristics that make the two groups fundamentally distinct at baseline. Given that prior analyses of the Matlab data indicate that differences do exist between the poor who join BRAC and those that do not, evidence of a BRAC effect may overestimate the true impact of the programme (Evans et al. 1998; Mahmud and Huda 1998; Zaman 1998). Lastly, while the household samples interviewed in 1995 and 1999 were not identical, the use of a common sampling frame provides some measure of internal control against village level confounders.

Consistent with Tipping's (1994) work in rural Vietnam, no marked differences in the prevalence of illness are apparent when comparing poor and non-poor. BRAC membership also appears to have no effect on rates of morbidity in either survey, suggesting that the powerful influence of environmental and seasonal risk factors for disease in this particular setting outweigh the protective benefits of higher socio-economic status or involvement in development activity.

Confirming this interpretation is evidence of a slight secular rise in overall rates of reported morbidity in 1999, which may represent a lagged effect of the flood that devastated the region a year earlier. Consistent with the literature, in both surveys, women appear to experience slightly greater morbidity than men, irrespective of socioeconomic group (Rahman et al. 1994; Ostlin et al. 2001).

As regards the hypothesis that participation in socio-economic development increases gender equity in treatment seeking, there is some descriptive evidence that greater equity in treatment seeking occurs in the BRAC group (Table 1). Whereas the preferential use of self-care among BRAC women and para-professional care among BRAC men apparent in the 1995 survey disappears in 1999, gender-specific differences in treatment seeking persist in poor non-member households. In general, however, men are less likely to resort to self-care than women, and are more likely to consult health providers within the formal medical sector. Analysis of treatment costs (not presented here) also reveals that men spent significantly more than women in both surveys, irrespective of BRAC membership. The substantial and continued reliance of women on unqualified providers emphasizes the need to raise social awareness about the value of women's health and well-being, and to increase the cultural and financial accessibility of qualified health care in a society that has traditionally placed restrictions on women's mobility and autonomy. Indeed, in a study involving BRAC and two other NGOs (Grameen Bank of Bangladesh and Self Employed Women's Association, SEWA, of India), findings reveal a positive impact of women's participation in credit-based development programmes on their demand for formal health care (Nanda 1999). The author concludes that economic empowerment improves women's access and control over resources mediated through increased mobility and autonomy of (health) decision-making within the household, and can potentially alleviate their health problems.

Neither descriptive nor multivariate analysis yields any support for our hypothesis that involvement in socio-economic development activities would increase the use of formal medical care in the case of illness. Indeed, multivariate analysis of data from 1995 suggests that sick individuals from BRAC member households are significantly less likely than poor non-members to consult formal medical care providers (para-professionals and qualified allopaths) (Table 4). It should be noted, however, that this effect largely reflects the greater tendency of poor non-members to rely on less-expensive para-professional care (see Table 1). In 1999, however, the relative likelihood of BRAC members and poor non-members using medical care is indistinguishable, and instead we note a strong positive effect among the non-poor. A similar explanation can be offered for the perplexing embankment effect noted in 1995. Although those living in poorer areas located outside the embankment were found to use formal medical care to a greater extent than those within, this effect is largely a consequence of their greater propensity to rely on less expensive para-professional care (outside 42.2%, inside 26.8%). In 1999, this situation is plausibly changed.

Of note, among the various factors cited earlier which determine treatment seeking, pre-existing health-beliefs and perception about illness play an important role. In a qualitative study of the same population in 1997 to explore women's perception about their own illnesses, it was found that women had lay explanations ('explanatory model') such as supernatural beings, inanimate objects etc. for every illness they experienced (Mahbub and Ahmed 1997). Treatment-seeking by women largely depended on beliefs about cause of illness and its cultural explanation, among others. They preferred traditional healers for illnesses supposedly caused by supernatural things, and modern medicine for other illnesses.

Lastly, increased use of formal medical care found in case of illnesses of longer duration is consistent with findings in the literature (Sauerborn et al. 1996; Bhatia and Cleland 2001).

Study findings indicate startling changes over time irrespective of BRAC participation and/or socioeconomic group. Most dramatic is the rise in the proportion of the population reporting self-care, and concomitant declines in the use of lay providers such as homeopaths and traditional doctors and qualified medical personnel. The only form of treatment that does not change in prevalence is the use of unqualified allopaths such as quacks and drug sellers who are consulted in almost one-quarter of illness episodes. These practitioners rarely follow standard therapies and are often unaware of specific indications, dosage and contraindications of medicines prescribed. In particular, the common practice of prescribing only a partial course of medicines such as antibiotics has raised considerable concern about the development of resistant microbial strains, and the potential dangers of drug side-effects and toxic poisoning (Trostle 1996).

The whole-scale rise in the prevalence of self-care to almost 55% of illness episodes in 1999, to levels commensurate with Vietnam (Tipping et al. 1994), Mexico (Levy-Flores et al. 2001) and Burkina Faso (Sauerborn et al. 1996) is striking, but not without precedent. While self-care during illness is a ubiquitous and age-old practice, there is recent evidence to suggest that it is increasing, particularly in countries where there are significant cost barriers to access or where the quality of medical care is perceived to be declining (Bloom and Standing 2001). According to Levin (1981), self-care is a process by which people function on their own behalf in health promotion and prevention and in disease detection. Encompassing the decision not to treat, self-care involves self-diagnosis by noting symptoms, and treatment actions based the association of symptoms with successful treatment outcomes in the past. Other self-care practices include: retaining and reusing old medications, purchasing scheduled drugs without prescription, consulting attendants at pharmacies, using common remedies (traditional or modern) available within the household for what are perceived to be recurring illnesses, or experimenting with medicines recommended by a relative or friend (Tipping and Segall 1995).

It is interesting to speculate about the forces underlying this dramatic shift to self-treatment witnessed in the 4-year period between surveys. For example, is it a response to the

rising costs of health care, a recognition of the limits to healing that medical care produces, or a function of increasing knowledge of how to treat illnesses (Rottenberg 1980; Leyva-Flores et al. 2001)? In support of economic explanations for this shift was the occurrence of a catastrophic flood in late 1998, in which millions lost their productive assets and livelihoods (Ahmed and Ahmed 1999). Matlab, lying beside the Meghna River and intersected by countless smaller tributaries, was one of the worst affected areas in the country. By the time this survey was conducted 1 year later, inhabitants of the region were well on their way to recovery, although residual effects on savings and livelihood strategies were still apparent (Ahmed et al. 2000). According to this explanation, a resulting decrease in the capacity to meet the costs of consultations with qualified medical practitioners and prescribed allopathic treatment might result in a shift to less expensive modes of self-care. The observation that self-care is significantly more likely in areas not covered by the low-cost medical services of the ICDDR,B, and in the relatively poorer areas of Matlab located outside the embankment, provides some support to this argument. Undermining this interpretation, however, is the dramatic and generalized nature of the trend towards self-treatment that is equally apparent in poor and non-poor groups.

Another possible explanation attributes the rise in self-treatment to the availability of free drugs supplied during post-flood rehabilitation efforts in late 1998. Subsequent investigations in the field revealed that ORS packets, paracetamol, water purification tablets, metronidazole for amoebiasis/giardiasis and Ascabiol solution for scabies were indeed supplied by BRAC through flood shelters (where both BRAC and non-BRAC poor households took refuge) that served eight of the 14 study villages in Matlab. However, the quantities distributed were extremely limited, making it highly unlikely that they lasted beyond the flood period.

A final explanation for the rise in self-care may be attributed to the remarkable opportunities for preventive health education and patient empowerment found in Matlab. According to this argument, the widespread diffusion of preventive health messages through BRAC and ICDDR,B and routine interaction with community health workers (community health volunteers in case of BRAC) serve to increase local capacity to recognize and diagnose common illnesses and undertake self-treatment. Indeed, subsequent field investigations have revealed that the volume of preventive health and nutrition education that occurred in the study community during this period was substantial. In 10 of the 14 villages studied, community education on water and sanitation, personal and domestic hygiene, family planning and the prevention and management of common illnesses like diarrhoea and fever were provided by village health workers (through fortnightly household visits, health forums as well as non-health forums like parents' meetings of the non-formal schools) to all households irrespective of BRAC membership.

Lending support to the 'health empowerment' explanation proposed above is that the substantial rise in self-care witnessed in 1999 is population-wide. Unlike experience in

Bombay, India where self-diagnosis and self-prescription were linked to higher socioeconomic status (Kamat and Nichter 1998), in Matlab the shift to self-care has occurred irrespective of socioeconomic group and/or participation in BRAC's development interventions. Moreover, there is recent evidence that this sea change in health-seeking behaviour may not be confined to Matlab. Nationally, household expenditure on drugs appears to be the single largest component of health spending (45% of all national spending and 73% of all household spending) in Bangladesh (HEU 1998). This high proportion of expenditure on drugs reflects high levels of self-treatment and self-medication. Consistent with this, the latest population-based demographic and health survey in Bangladesh indicates a substantial rise in the use of home-administered oral saline for the treatment of diarrhoea from 61% of episodes in 1996–97 to 74% in 1999–2000 (NIPORT, MA and ORCM 2001).

A related and important question is whether this shift to self-care is without adverse consequences for health. Results indicate the preferential use of medical care in the case of more serious illness. However, is it reasonable to assume that the decision to self-treat or seek medical care is informed and appropriate? Levin (1981) states that 'the central motive behind public health interest in self-care appears to remain the historical one of a desire to maintain personal integrity and self-control over one's health destiny' (pp. 180). While self-reliance for curative and preventive care is a laudable goal, it remains critical that the health care decisions and actions taken by sick individuals or their care-givers are both safe and appropriate (Abosedo 1984). In this respect, efforts to increase health-related knowledge and skills to facilitate decisions about whether self-treatment is indicated, and if so, what therapeutic regime is appropriate, should be emphasized as a key component of primary health care. Enhancing local capacities to assess services on offer, to judge provider competence and to evaluate whether costs are justified and reasonable may also support safe and cost-effective treatment decisions (Bloom and Standing 2001). Finally, in an increasingly pluralistic health care system, it is essential that health sector reform takes into account the full range of health providers, both private and public, and qualified and unqualified. It is essential that basic pharmaceutical training be made available to the full spectrum of health care providers, including lay practitioners and drug peddlers, and that managerial and regulatory measures be enforced to control the misuse of potentially dangerous drugs (Trostle 1996; Thawani and Gharpure 1997; Kamat and Nichter 1998).

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