Spatial, Demographic and Socioeconomic Correlates of Treatment-seeking Behaviour During Common Childhood Illnesses: A Case of India

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Abstract. *The focus of the social science research on child health in developing countries is mainly confined in identifying the underlying determinants of morbidity and mortality. The underlying determinants of treatment seeking behaviour during common childhood illnesses largely remain unexplored; though it is an outcome of interactions among a number of spatial, demographic and socioeconomic factors. Treatment seeking in either the public or the private medical sector is also important as motivation to seek quality treatment by incurring cost associated with it. Using data from National Family and Health Survey (NFHS-2), 1998-99, this paper tries to identify various factors, which might have direct or indirect linkages with treatment seeking behaviour during common childhood illnesses. The result of multinomial logistic regressions show that spatial factors like region and place of residence; demographic factors like child's age, birth order and sex of the child; and socioeconomic factors such as maternal education, standard of living of the household, religion and caste, work status of the mother and exposure to mass media are significantly associated with treatment seeking behaviour; especially in seeking treatment from private medical sector.*

Keywords: Childhood illnesses; diarrhoea; cough treatment seeking behaviour; medical treatment; private medical treatment; socio-economic factor; spatial factor; case study; India.

1. Introduction

In recent years, epidemiologists and social scientists have increasingly devoted their attention to study the underlying causes associated

with the two major killer diseases of under-five children, namely, diarrhoea illness and acute respiratory infection (ARI). In the developing countries, among all childhood deaths more than half are attributed to ARI and diarrhoea (UNICEF, 2004). According to the National Family Health Survey (NFHS-2), 1998-99, in India, the prevalence of diarrhoea was about 19 per cent, and the percentages were about 30 and 19 for fever and acute respiratory infection (ARI) respectively with a specified reference period.

The focus of the social science research in this regard is on examining the relationship between 'underlying' socioeconomic variables and health outcomes, with most focusing on mortality (Preston, 1980: Schultz, 1984; Trussell and Mencken, 1984; Rosensweig and Schultz, 1983; Behm: 1980). On the other hand, biomedical literature focuses on the biologic precursors (such as infection and malnutrition) of morbidity and mortality. For the children of developing countries it is obvious that exposure and response to diseases are conditioned by their social, economic, and environmental milieu. But the underlying determinants of "*treatment seeking behaviour*" for common childhood illnesses largely remain unexplored. Few theoretical models have been developed to understand treatment preferences better. Important among them may include Health Belief Model (Sheeran and Abraham, 1995), Theory of Planned Behaviour (Conner and Sparks, 1995) and Health Care Utilization Model (Andersen and Newman, 1973; Weller *et al.*, 1997). Among these models, the health care utilization model by Anderson (later modified by Weller) is most commonly used. In this model, factors determining the choices of healthcare providers include severity of disease, perceived vulnerability, socioeconomic factors including education. The relative importance of individual factors varies considerably between settings. From practical point of view only a few studies in the developing world are available in this context. A study in Guatemala revealed that seriousness of illness as perceived by mothers is one of the important factors in treatment seeking behaviour and families are more likely to be taken to treatment for fever and gastrointestinal symptoms, as compared with respiratory and other symptoms, and infants and low parity children are more likely to visit providers than other children (Goldman and Heuveline, 2000). Another study in rural Tanzania suggested that household standard of living is an important determinant of seeking care from a health facility in case of childhood diarrhoea (Schellenberg *et al.*, 2003). These findings are in compliance with the findings of Gwatkin and others, 2000. Some other studies also have identified economic status as most significant predictor of medical-care use in the developing countries (Neumark et al., 1992; Inman, 1976). On the other hand, in India and Bangladesh, cross-sectional surveys of practitioners and care providers reported discriminatory care seeking for boys

and girls (Ganatra *et al.*, 1994; Hossain and Glass, 1988; Pandey, 2002); even when treatment is free (Chen *et. al.* 1981; Aziz, 1977). A regional difference of gender bias in treatment-seeking behaviour has also been observed in India (Basu, 1989). Various studies have argued the positive effect of maternal education on child health and survival (Caldwell and Caldwell, 1988; Cleland, 1990; Goodburn *et al.*, 1990; Barrera, 1990; Govindasamy and Ramesh, 1997; Ghosh, 2003). Maternal work status, religion and caste, birth order, child's age and sex also have a great bearing on utilization of childcare services in India (Govindasamy and Ramesh, 1997). Results of a cross-national survey of a number of developing countries all over the world also revealed that prevalence of visits to medical facilities is the highest among children age 6-23 months, children of lower birth orders, children in urban areas, children of mothers with at least secondary education and children of mothers exposed to any sort of mass media (Ryland and Raggers, 1998). Rao *et al.* (1998) have observed that women regularly exposed to electronic mass media are much more likely than other women to know about ORS (Oral Rehydration Salt) packets and to use ORS or RHS (Recommended Home Solution) to treat their children for childhood diarrhoea.

It is worth mentioning here that the treatment seeking behaviour in the response of specific diseases also depends upon the physical condition of health infrastructure, accessibility, quality of services and availability of fund. Despite a large and extensive public healthcare system in India, there has always been some criticism regarding its quality and accessibility as the entire system is grossly overloaded and under-funded (World Bank, 1997). Rural-urban bias in the healthcare system has also been a matter of great concern (Duggal, 1997). It is to be noted that the cost of treatment in the private sector is much higher in the urban areas than in the rural areas (Gumber and Berman, 1995). Now it has been well established that private healthcare sector form an equally significant part of the health system in India. Even the poor do not only access private sector but most often go to informal sector providers (Rohde and Viswanatha, 1995). Recent household surveys of many countries around the world indicate private providers play a significant role in healthcare delivery, even to the poor (Gwatkin and others, 2000). Private practitioners are now acknowledged to be an important source of treatment for diarrhoea, ARI and malaria (Waters *et al.*, 2002). In contrary to general belief Gupta and Dasgupta (2002) showed that a greater percentage of high and middle-income households use government health facilities and a significant proportion of lower income households use private facilities.

The principal objective of the present study is to assess the spatial, demographic and socioeconomic correlates of treatment seeking behaviour

among children, who were affected by the two common childhood illnesses, namely, diarrhoea and cough[1]. The morbidity pattern and prevalence are first described, along with spatial and socioeconomic differentials, followed by an analysis of the decision on treatment, whether it was sought at all, and if so, whether they seek treatment in public sector or in private sector or they did not seek any formal treatment.

2. Material and Methods

Data for this study are drawn from The National Family Health Survey (NFHS-2), India, carried out between 1998-99 by the ORC-Macro and the International Institute for Population Sciences, Mumbai. Data were collected from a nationally representative sample of 90,303 ever-married women of age group 15-49 residing in 92,486 households on fertility, mortality, morbidity, family planning, and important aspects of reproductive health, nutrition and childcare. In addition, the survey collected information on all children born during the last three years preceding the survey. Of 33,026 surveyed children, data on morbidity could be obtained for 30,970 children, and these are analyzed in the paper. On morbidity, this survey asked the questions on the occurrences of four important diseases, namely, asthma, tuberculosis, malaria, and jaundice to every member of the households and the occurrences of diarrhoea, cough to the children (for reference period of each disease, refer to the footnote to Table 1). But the survey asked the questions on treatment seeking behaviour (source of treatment and no treatment) only for the two childhood diseases, namely, diarrhoea and cough. Besides, NFHS also collected information on background characteristics of mother, child and households. These include type and region of residence, age and sex, religion, caste, educational attainment, work status of mother, mass media exposure of mother and standard of living of the household.

For a detailed analysis of spatial, demographic and socioeconomic correlates of treatment seeking behaviour, it is necessary to go beyond the simple dichotomy of treatment/no treatment. The kind of treatment taken/given is also important, as various factors are associated with it. According to Weller et al., 1997 these include *predisposing factors* like age, gender, religion, education, attitude towards health services, knowledge about the illness etc.; *enabling factors* like accessibility and availability of services, financial resources to purchase services, health insurance, social network support etc.; and *need factors* such as perception of severity, days missed from work or school, help from outside etc. It is worth to mention that the factor, which encompasses all the above three factors, is *motivation to seek*

treatment. It is believed that who sought treatment from private provider; the motivation of seeking treatment is at the highest for them as cost of treatment is often high in private sector. In order to meet the objective of the present study, the response variable has been classified into three categories: no treatment/self-treatment, treatment from the public sector, and from the private sector. The first category includes no treatment, treatment from shop, friends/relatives, and others. In this case it is assumed that perceived severity or motivation for seeking treatment is at the lowest level. The public sector comprises all types of government medical and paramedical institutions, community health workers, NGO/Trust hospitals/clinics, NGO workers, whereas, private sector includes all types of private medical and paramedical practices, *Vaidya*, *Hakim*, homeopath, traditional healer and other private sector establishments (for details of medical institutions please refer to the note to Table 3). Treatment-seeking from public sector, where financial cost is not associated but it is associated with opportunity cost and assumed that the motivation of seeking treatment is at the medium level. It is worthwhile to mention that those who took treatment both from the private and public sector are categorized in the private sector as it has been assumed that motivation to seek treatment is higher for those who have taken treatment from the private sector.

Table 1
PREVALENCE OF CHILDHOOD MORBIDITY IN INDIA, NFHS-2, 1998-1999

Nature of illness	Percent of Children reported the illness during specified reference period*
Diarrhoea	19.6
Fever	29.7
Acute Respiratory Infection (ARI)	19.2
Asthma	1.3
Tuberculosis	0.6
Malaria	3.8
Jaundice	1.4
Total Number of Children	**30970**

Notes:

1. Reference periods for diarrhoea, fever and acute respiratory infection (cough with short, rapid breath) are fifteen days preceding the survey date.
2. Reference periods for asthma and tuberculosis are at the time of survey (point prevalence).
3. Reference periods for malaria and jaundice are three months and twelve months respectively preceding the survey date.

Predictor variables influencing treatment seeking behaviour are: region of residence and place of residence, age of the mother at the time of birth of particular child, age of the child at survey, birth order and sex of the child, religion and caste, maternal education, standard of living of the household, work status and, mass media exposure of mother. Geographic region has been included as a predictor because level of prevalence of diseases, which also depends upon climatic conditions to some extent, and access to and utilization of healthcare services varies across the regions of India. It has been observed that "south" has better access to as well as the utilization of healthcare services, whereas "central" has poor track record in this regard (six categories are used: south, east, central, north, west and north-east). Rural areas in the developing country like India are characterized by inadequate sanitary and water supply infrastructure and poor access to health services (public as well as private) as compared to urban areas and hence presumably more susceptible to childhood communicable diseases but have lower utilization of health services than their urban counterparts. Since a younger child is considered more delicate than an older one, greater urgency may be shown in seeking treatment. Hence age of the child used as a categorical variable and the categories are: <6 months, 6-11 months, 12-23 months, and 24+months. Age of the mother has been included in the analysis because mothers of tender age are likely to be less educated and less aware of the signs and symptoms of the illnesses and utilization of healthcare services than their older counterparts (categories used: <20 years, 20-29 years, and 30+). Higher birth order children are less likely to get treatment from illness at health facility than first birth order as higher birth order children may be neglected than younger one by virtue of being born in large family (it is categorized as: 1, 2-3 and 4+). Sex of the child is an important variable of interest since it has been often been argued that in the patriarchal Indian society boys are more likely than girls to receive treatment from any illness. Variations in the socio-cultural practices related to childbirth, food habits, marriage, family system and customs related to prevention and treatment-seeking behaviour of diseases have been observed among various religious groups like Hindu, Muslims, Christians, Sikhs etc. Moreover, within the Indian caste hierarchy, the most disadvantaged and oppressed castes, called 'Scheduled Castes' (SCs), were traditionally denied access to resources and various services, including health services, and tribal populations, called 'Scheduled Tribes' (STs) suffers due to isolation and discrimination. Here religion and caste have been pooled to form a single variable and categorized as Hindu-other than SC/ST, Hindu-SC/ST and Other than Hindu. Treatment-seeking behaviour could also conceivably vary according to household economic condition. Households of high economic status are likely to get early and good quality treatment from private sector health facility than other

households. Since NFHS-2 did not collect data on household income or expenditure, a proxy, standard of living index as calculated by NFHS-2 on the basis of housing conditions and land and consumer durable goods, has been incorporated in the analyses. On the basis of the scores, households are classified into low, medium and high standard of living (details of scores are as given in the report of National Family Health Survey, 1998-99). Maternal education is an important factor possibly influencing the treatment-seeking behaviour since higher educated persons, owing to their exposure to outside world, are more aware of personal hygiene and issues on preventive, promotive, and curative healthcare and likely to take their child to health facility at the earliest than less educated mothers (categories used here: illiterate, educated up to middle standard and, higher educated). Women's work participation may also have a bearing because of the conflict between work schedule and schedules of treatment providers. It is widely believed that the exposure to mass media can play an important role in educating women about childhood illnesses, its prevention and utilization of healthcare in India. Spot messages on home treatment of diarrhoea using oral rehydration salt (ORS) and recommended home solution (RHS) are aired on radio and television and published in print media. Here "exposure to mass media" has been created from three separate variables, namely, 'read newspaper or magazine at least once a week', 'watch television at least once a week' and 'listen to radio at least once a week'. These three variables are found to be strongly associated with each other and so a composite variable has been obtained from these three: 'exposure to mass media of any sort'. If a woman is exposed to any of these three, then she is regarded as exposed to any sort of mass media.

Since the response variable has more than two categories (no treatment/self-treatment, treatment from public source, and treatment from private source) so two sets of multinomial logistic regressions (one set for diarrhoea and another for cough) have been employed here to identify factors affecting treatment seeking behaviour of diarrhoea and cough.

The equations for multinomial logit regression in this case can be written as

$$\log (P_1/P_3) = \alpha + \sum \beta_i X_i \quad (i=1, 2, \ldots\ldots, 11) \text{ ----- (1)}$$

$$\log (P_2/P_3) = \dot{\alpha} + \sum \beta'_i X_i \quad (i=1, 2, \ldots\ldots, 11) \text{ ------ (2)}$$

where P_1= probability of using public sector health facility,

P_2 = probability of using private sector health facility,

P_3 = probability of no treatment/self-treatment, and

$P_1 + P_2 + P_3 = 1$

Here $\{X_i\}$ (i = 1, 2....11) are the aforesaid predictor variables, α is the intercept and β_i's (i = 1,2 .....11) are the regression coefficients of equation (1) and $\acute{\alpha}$ is the intercept and β'_i's (i = 1,2 .....11) are the regression coefficients of equation (2). The multinomial logistic regressions are used to estimate adjusted effects of spatial, demographic and socioeconomic variables on treatment seeking behaviour. This involves calculating adjusted values of the response variable, expressed as percentage for each category of treatment (Retherford and Choe, 1993).

3. Results and Discussions

Prevalence of childhood morbidity in India is shown in the Table1. It has been revealed that among all the listed types of morbidity, the prevalence of fever is the highest (29.7 percent), followed by diarrhoea (19.6 percent) and ARI (19.2 percent); these levels are comparable to those for various South-East Asian countries. Prevalence levels of malaria, jaundice, asthma and tuberculoses are 3.8, 1.4, 1.3 and 0.6 percent respectively.

Table 2 presents the prevalence of child morbidity by selected background characteristics. If spatial characteristics are under consideration, children of the southern parts of India are less prone to diseases compared to the other parts. Prevalence of nearly every disease is alarmingly high among the children of north-eastern region, especially; the prevalence of fever, malaria and jaundice. No such significant rural-urban differential in disease prevalence has been observed except the occurrence of ARI and malaria, which are considerably higher in rural areas. Among demographic characteristics, it has been seen that disease prevalence also varies according to age of the child. It has been noticed that children of the age group 6-23 months are more susceptible to diseases. No such significant difference has been observed in prevalence of diseases by mother's age. It has also been observed that the higher order children are more prone to the diseases than others. Male children are more likely to be affected by diseases, especially, diarrhoea, fever and ARI than their female counterparts. Among the socioeconomic characteristics, it can be said that the children of forward caste Hindus are less prone to suffer by diseases than others. Disease prevalence is significantly higher among those children whose mothers are illiterate and who are from poor families. It has been seen that the children of the working mothers have suffered from ailments more than that of non-working mothers. Prevalence of diseases is higher among the children whose mothers are not exposed to mass media of any sort.

Table 2
PREVALENCE OF CHILD MORBIDITY IN INDIA BY SELECTED BACKGROUND CHARACTERISTICS, NFHS-2, 1998-1999

Background Characteristics	Diarrhea	Fever	A R I	Asthma	Tuberculosis	Malaria	Jaundice	No of children
	Percent of children reported the incidence during the reference period							
Geographic region								
South	13.9	27.4	13.7	0.9	0.2	1.0	0.5	4260
East	17.9	31.3	21.9	1.5	0.8	3.6	1.1	5294
Central	22.9	28.5	23.9	1.0	0.7	5.6	1.7	6608
North	21.6	28.5	17.5	1.0	0.4	2.1	1.2	7295
West	21.7	29.6	12.2	1.3	0.6	3.4	1.5	3260
North-East	17.9	34.3	22.2	2.3	0.8	7.6	2.9	4253
Residence								
Rural	19.8	30.1	20.3	1.4	0.6	4.4	1.6	22828
Urban	19.3	28.8	16.0	1.0	0.6	2.1	1.1	8142
Child's age								
< 6 months	16.3	20.1	16.3	1.3	0.4	3.6	1.6	5533
6-11 months	26.0	34.8	23.2	1.0	0.4	3.8	1.4	5080
12-23 months	22.4	34.0	20.5	1.2	0.6	4.2	1.5	10205
24+ months	15.7	28.2	17.4	1.6	0.7	3.6	1.3	10152
Mother's age								
< 20	20.8	30.7	21.3	1.0	0.5	4.0	1.9	6157
20-29	19.6	29.5	18.7	1.1	0.5	3.6	1.5	19141
30+	18.9	29.7	18.5	2.3	0.9	4.5	0.9	5672
Birth order								
1	19.1	29.5	19.0	0.9	0.4	2.9	1.6	9016
2-3	19.3	28.9	18.5	1.2	0.5	3.6	1.4	13502
4+	20.9	31.3	20.5	1.9	0.9	5.3	1.4	8452
Sex								
Male	20.1	30.6	20.3	1.3	0.5	3.7	1.3	16180
Female	19.2	28.8	18.0	1.3	0.6	4.0	1.6	14790

(Continued)

(*Continuation* – Table 2)

Background Characteristics	Diarrhea	Fever	A R I	Asthma	Tuberculosis	Malaria	Jaundice	No of children
	Percent of children reported the incidence during the reference period							
Religion/Caste								
Hindu-Other than SC/ST	18.7	27.6	18.2	1.2	0.5	3.1	1.2	15110
Hindu-SC/ST	20.5	29.7	20.1	1.1	0.6	4.5	1.3	7636
Other than Hindu	20.7	33.7	20.1	1.6	0.7	4.7	1.9	8224
Maternal education								
Illiterate	20.5	29.8	20.6	1.5	0.7	4.5	1.5	16740
Primary-Middle completed	20.4	31.3	19.8	1.3	0.5	3.8	1.7	9144
>Middle complete	15.9	26.7	13.8	0.7	0.3	0.3	0.8	5081
Background Characteristics	**Diarrhea**	**Fever**	**A R I**	**Asthma**	**Tuberculosis**	**Malaria**	**Jaundice**	**No of children**
SLI								
Low	20.2	30.7	21.2	1.7	0.9	5.5	1.8	9817
Medium	20.3	30.2	19.4	1.2	0.5	3.6	1.4	14924
High	17.4	27.0	15.3	0.7	0.3	1.8	0.9	5828
Work status of mother								
Not working	19.1	29.1	18.6	1.3	0.6	3.1	1.4	22237
Working	21.2	31.3	20.8	1.4	0.5	5.6	1.6	8729
Mass media exposure								
No	19.5	29.2	19.7	1.7	0.7	5.1	1.6	13283
Yes	19.8	30.2	18.8	1.0	0.5	2.9	1.4	17687
All children	**19.6**	**29.7**	**19.2**	**1.3**	**0.6**	**3.8**	**1.4**	**30970**

Notes:

1. Reference periods for the diseases are shown in footnote to Table 1.
2. Frequencies in categories may not necessarily add up to total because of missing information on the background characteristics.

Table 3 presents the proportion of children who had diarrhoea and cough, sought treatment, according to the type of providers they consulted. Among 6,083 children who had diarrhoea (of the 30970 children for whom data are obtained), 33.5 percent did not seek any formal treatment. A higher proportion sought treatment for diarrhoea from the private medical sector than the public. Among children, who had diarrhoea, majority of them consulted higher level private providers (42.6 percent) followed by higher level public providers (10.9 percent)(for detailed definitions of higher, middle and lower level public and private providers refer to the footnote to Table 2). Among children who received treatment from any one source, 72.5 percent of them received treatment from the private medical sector and majority of them sought treatment from higher level private facility (64.1 percent), whereas, 31 percent of children sought treatment from the public medical sectors and majority of them from higher level public facility (16.3 percent).

Similarly, of the 10,851 children who reported cough, 35.6 percent did not seek any formal medical treatment (Table 3). Overall, 48.2 percent of children obtained treatment from private medical sectors, mostly from higher level private providers (42 percent), while only 18.1 percent of children received treatment from public medical sectors, mostly from higher level public health facility (9.4 percent). Among children who sought treatment for cough from any one source, 70 percent received it from private medical sector (majority from higher level private providers) compared with 29.3 percent from public medical sector, mostly from higher level public providers. In both cases, it has been observed that the utilization of lower level public and private facility, which mostly exist in the rural areas, is considerably low. This implies that people of rural areas are compelled to take their ailing children to the nearby urban centres for treatment and this also exposes poor quality of services of lower level public and private health facility and a strong urban bias of healthcare delivery.

Table 3
SOURCES OF TREATMENT FOR DIARRHOEA AND COUGH, INDIA, NFHS-2, 1998-1999

Sources of Treatment	Diarrhoea			Cough		
	No of children	Percentage who took treatment from the specified source		No of children	Percentage who took treatment from the specified source	
		Among all children with illness	Among those who took any treatment		Among all children with illness	Among those who took any treatment
Public Medical Sector						
Lower Level Public Providers	198	3.2	4.9	1026	2.5	3.9
Middle Level Public Providers	400	6.6	9.9	676	6.2	9.7
Higher Level Public Providers	661	10.9	16.3	271	9.4	14.7
Private Medical Sector						
Lowe Level Private Providers	339	5.6	8.4	677	6.2	5.0
Higher Level Private Providers	2593	42.6	64.1	4559	42.0	65.2
No Treatment	2039	33.5	NA	3865	35.6	NA
Total Children	**6083**	**6083**	**4044**	**10851**	**10851**	**6986**

Notes:

1. Lower level public providers consist of Sub-Center, Govt. Mobile Clinic, Govt. Paramedics. Govt. Health Post, Camp, and Govt. Community Health Worker.
2. Middle level public providers comprise Urban Health Centre, Urban Health Post, Urban Family Welfare Clinic, Rural Hospital, and Primary Health Centre.
3. Higher level public providers consist of Govt. Municipal Hospital and Govt. Dispensary.
4. Lower level private providers include Private Mobile Clinic, Private Paramedic, Vaidya, Hakim, Traditional Healer, Pharmacy, and Other.
5. Higher level private providers comprises Private Hospital, Private Clinic, Private Doctor.
6. Numbers and percentages given in the columns may not add up to totals or to 100 because of multiple responses.
7. NA=Not applicable.

4. Treatment Seeking Behaviour

4.1 Gross Differentials

Table 4 presents differentials in the treatment seeking behaviour for diarrhoea and cough during childhood by spatial, demographic, and socioeconomic variables. Among spatial variables, it seems that the children from southern, northern and western parts of India are more likely to seek formal treatment. Treatment seeking in any formal sector is the lowest in the north-eastern region. Treatment seeking from the private sector is significantly higher in all the three regions mentioned earlier. It has been observed that formal treatment seeking in general and treatment seeking from the private sector, in particular, is very high in urban areas. This implies that motivation to seek treatment is higher in urban areas than in rural areas. Among demographic characteristics, children of older women and the children of less than six months of age are less likely to get treatment from any formal sector than others. Negative relationship has been observed between birth order and treatment-seeking in any formal sector, i.e. lower birth order children are more likely to seek formal treatment. It may be due to the fact that higher birth order children and the children of older mothers have prior experience of these diseases and would like to prefer home remedy.

Again among socioeconomic characteristics, it has been seen that children of wealthier families, forward caste Hindus and of educated mothers are more likely to seek treatment from any formal sector for both diarrhoea and cough. Perceived severity of diseases and motivation of seeking treatment from outside may be higher for forward caste and for educated mothers. Children of non-working mothers and the children of those mothers who have been exposed to some sort of mass media are more likely to receive treatment from any formal sector, especially, in private sector. Although majority of children who sought care consulted private practitioners irrespective of their demographic and socioeconomic characteristics, the probability of consulting private providers increased substantially among the children of wealthier households, of more educated mothers, and belonging to forward caste Hindus. This implies that provision for treatment in the public sector is rather low in India.

Table 4
UNADJUSTED PROBABILITIES (IN PERCENTS) THAT CHILDREN WHO SUFFERED FROM DIARRHOEA AND COUGH BY SOURCE OF TREATMENT AND BY SELECTED BACKGROUND CHARACTERISTICS, INDIA, NFHS-2, 1998-1999

Background Characteristics	Diarrhoea				Cough			
	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector
Geographic region								
South	592	28.0	17.9	54.1	1245	26.1	15.8	58.1
East	948	43.6	18.6	37.9	1926	42.7	12.6	44.8
Central	1510	37.1	9.5	53.4	2503	42.1	8.8	49.1
North	1569	20.9	27.6	51.5	2303	24.5	24.6	50.8
West	706	26.1	11.8	62.2	1096	20.9	13.3	65.8
North-East	758	51.2	25.5	23.4	1778	49.0	22.6	28.4
Residence								
Rural	4514	36.9	19.5	43.6	8030	39.6	16.7	43.7
Urban	1569	23.7	16.3	60.0	2821	24.4	15.2	60.4
Child's age								
< 6 months	900	42.8	13.3	43.9	1630	43.9	13.3	42.8
6-11 months	1319	32.7	18.2	49.1	2105	32.4	17.0	50.6
12-23 months	2281	30.5	19.9	49.6	3828	34.5	16.7	48.7
24+ months	1583	33.4	20.2	46.4	3288	34.9	17.0	48.1
Mother's age								
< 20	1278	33.5	18.4	48.1	2309	36.5	15.8	47.8
20-29	3734	32.3	19.0	48.7	6623	34.3	16.5	49.3
30+	1071	37.8	17.6	44.5	1919	39.2	16.7	44.1

(Continued)

(*Continuation* – Table 4)

Background Characteristics	Diarrhoea				Cough			
	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector
Birth order								
1	1720	28.7	20.6	50.7	3268	29.2	17.1	53.7
2-3	2598	33.1	18.8	48.2	4593	35.4	17.0	47.7
4+	1765	38.9	16.5	44.6	2990	43.0	14.5	42.4
Sex								
Male	3247	32.0	19.4	48.6	5915	33.1	17.5	49.4
Female	2836	35.3	17.8	46.9	4936	38.7	15.0	46.4
Religion/Caste								
Hindu-Other than SC/ST	2820	31.8	18.2	50.0	5076	32.5	16.2	51.3
Hindu-SC/ST	1696	33.5	18.0	48.5	3102	34.8	17.1	48.1
Other than Hindu	1567	36.6	20.2	43.2	2673	42.4	15.9	41.7
Maternal education								
Illiterate	3418	38.4	18.2	43.4	5800	42.7	15.2	42.1
Primary-Middle completed	1860	31.3	19.4	49.4	3397	30.4	18.2	51.1
>Middle complete	805	18.1	18.8	63.1	1652	21.5	15.9	62.6
SLI								
Low	1983	42.2	18.4	39.5	3578	45.8	15.0	39.2
Medium	3025	32.7	19.8	47.4	5219	34.0	17.5	48.5
High	1009	20.0	15.8	62.4	1925	20.9	15.8	63.3
Work Status of Mother								
Not working	4238	31.6	17.9	50.5	7643	32.9	15.6	51.5
Working	1845	37.9	20.3	41.8	3208	42.2	18.0	39.8

(Continued)

(*Continuation* – Table 4)

Background Characteristics	Diarrhoea				Cough			
	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector
Mass Media Exposure								
No	2589	41.3	17.4	41.3	4476	44.6	14.7	40.7
Yes	3494	27.8	19.6	52.7	6375	29.3	17.5	53.2
All children	**6083**	**33.5**	**18.6**	**47.8**	**10851**	**35.6**	**16.3**	**48.0**

Notes:

1. Frequencies in categories may not necessarily add up to total because of missing information on the background characteristics.
2. Those who took treatment both from the private and public sector are categorized in the private sector.

4.2 Net Differentials

Multinomial logistic regression has been employed to assess the net influences of various spatial, demographic and socioeconomic characteristics on treatment seeking behaviour. Because the coefficients obtained from multinomial logistic regression analysis are not easy to interpret[2], the results are presented in Table 5 as predicted probabilities of no treatment, treatment from public providers, and treatment from private providers in case of diarrhoea and cough, for categories of various spatial, demographic and socioeconomic characteristics. The results of the regression analysis by and large conform to the observations based on the bivariate analysis in Table 4.

Among the spatial variables, region of residence as well as place of residence both have significant impact on seeking care. The probability of not seeking treatment for both the childhood illnesses is significantly high in Eastern, Central and North-Eastern regions of India, even after controlling all other demographic and socioeconomic variables. This only implies that the perceived severity and motivation of seeking formal medical treatment (public as well as private sector) is at the lowest among these regions, even after controlling all other predictors. In the North-Eastern region, the probability of not seeking any formal treatment is the highest among all other regions (52.8 per cent for diarrhoea and 51.1 per cent for cough). In Northern region, the children are significantly likely to seek treatment from public sector. Adjusted probability to seek treatment from private consultant is significantly higher in Northern as well as Western India. It has also been revealed from the analysis that, adjusted probability of not seeking any formal treatment decreases from rural to urban area, whereas, the proportion of children consulting a private provider increases significantly in the urban areas (from 46.9 percent to 53.6 percent and from 47.3 percent to 54.2 percent for diarrhoea and cough respectively) and the plausible reasons have been discussed earlier.

Table 5
PREDICTED PROBABILITIES (IN PERCENT) OF NOT SEEKING TREATMENT AND TREATMENT FROM PUBLIC AND PRIVATE PROVIDERS, COMPUTED FROM MULTINOMIAL LOGISTIC REGRESSIONS, FOR CATEGORIES OF BACKGROUND CHARACTERISTICS, INDIA, NFHS-2, 1998-1999

Background Characteristics	Diarrhoea				Cough			
	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector
Geographic region								
South (rc)	592	30.2	16.4	53.4	1245	28.1	15.3	56.6
East	948	40.0**	18.2	41.7	1926	38.2**	13.0	48.8
Central	1510	34.4**	9.5	56.2	2503	38.1**	9.0	52.9
North	1569	21.5	29.0**	49.6*	2303	24.9	26.0**	49.1
West	706	28.2	11.6	60.2	1096	22.9	13.3	63.9**
North-East	758	52.8**	25.6	21.6	1778	51.1**	21.9	27.0
Residence								
Rural (rc)	4514	34.5	18.6	46.9	8030	36.1	16.6	47.3
Urban	1569	30.2	16.2	53.6**	2821	31.4	14.4	54.2**
Child's age								
< 6 months (rc)	900	45.1	13.0	41.9	1630	42.8	13.1	44.1
6-11 months	1319	33.4	17.8**	48.8**	2105	31.8	16.6**	51.6**
12-23 months	2281	29.7	19.2**	51.1**	3828	33.9	16.5**	49.6**
24+ months	1583	32.6	19.6**	47.9**	3288	34.3	16.6**	49.1**
Mother's age								
< 20 (rc)	1278	33.5	17.0	49.5	2309	37.4	15.3	47.4
20-29	3734	33.3	18.2	48.5	6623	34.5	15.8	49.7
30+	1071	33.4	18.6	48.0	1919	33.2	17.5*	49.4

(Continued)

(*Continuation* – Table 5)

Background Characteristics	Diarrhoea				Cough			
	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector
Birth order								
1 (rc)	1720	30.9	20.7	48.4	3268	30.7	17.0	52.3
2-3	2598	34.2*	18.2	47.7	4593	36.1**	16.5	47.4
4+	1765	34.6**	15.4	50.0	2990	37.7**	14.1	48.2
Sex								
Male (rc)	3247	32.2	18.7	49.2	5915	32.5	17.1	50.4
Female	2836	34.8*	17.3	47.9	4936	37.8**	14.7	47.5
Religion/Caste								
Hindu-Other than SC/ST (rc)	2820	34.2	18.5	47.4	5076	34.7	16.6	48.6
Hindu-SC/ST	1696	35.0	19.9	45.1	3102	38.6**	16.2	45.3
Other than Hindu	1567	30.1	15.2	54.7**	2673	32.0	14.8	53.2**
Maternal education								
Illiterate (rc)	3418	35.9	17.5	46.5	5800	38.3	15.4	46.3
Primary-Middle completed	1860	32.2	18.2	49.6*	3397	31.3	17.4**	51.2**
>Middle complete	805	26.0	19.2**	54.8**	1652	30.5	15.2	54.3**
SLI								
Low (rc)	1983	35.4	19.4	45.2	3578	38.2	16.3	45.5
Medium	3025	33.2	18.8	48.0	5219	34.4	16.5	49.2**
High	1009	29.6	13.3	57.2**	1925	29.9	14.1	56.0**
Work Status of Mother								
Not working (rc)	4238	32.7	17.3	50.0	7643	33.5	15.2	51.3
Working	1845	34.8*	19.8	45.4	3208	38.1**	17.9	44.1

(Continued)

(Continuation – Table 5)

Background Characteristics	Diarrhoea				Cough			
	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector	No. of children	No treatment taken	Treatment only from Public sector	Treatment from Private sector
Mass Media Exposure								
No (rc)	2589	36.9	16.5	46.6	4476	37.6	15.0	47.4
Yes	3494	30.9	19.1**	50.0**	6375	32.4	15.6**	52.0**

Notes:

* *The coefficient in the underlying multinomial logistic regression is significant at the 5 per cent level.*

** *The coefficient in the underlying multinomial logistic regression is significant at the 1 per cent level.*

rc: Reference Category

Among demographic characteristics, age of the child, birth order and sex of the child have significant relationship in seeking care. It seems that age of the mother does not have much significant influence in seeking treatment for the children. A child's age has a direct positive relationship with the probability that he/she will seek treatment, even after controlling all other factors. It has been observed that the proportion of children seeking care from both the public as well as private sector significantly increases with increase in age. A plausible reason could be that signs and symptoms of common childhood illnesses like diarrhoea and cough are taken as normal among the children of very tender age and seriousness in seeking treatment is not generally shown. A significant negative relationship has been observed between the birth order of the child and seeking any formal treatment. The higher order children are less likely to seek any formal care for both the illnesses. This is possibly due to the fact that by virtue of being born in large family; higher order children receive less care than the younger one, who is presumed to be more delicate and also may be due to the fact that higher order children may have experienced these diseases earlier also and prefer home remedy. Gender discrimination in seeking treatment has also been observed significantly for the two childhood diseases; the proportion of not seeking treatment for boys to girls increases from 32.2 percent to 34.8 percent for diarrhoea and 32.5 percent to 37.8 percent for the cough. This supports the earlier findings on the gender differential in treatment seeking behaviour for the common childhood illnesses in India (Ganatra *et al.*, 1994; Basu, 1989; Pandey *et al.*, 2002). However, differences are quite narrow.

Socioeconomic and cultural characteristics, household wealth, education, caste, and religion emerge as statistically significant predictors in seeking treatment. SC and ST Hindus are significantly less likely to seek care and less likely to consult private provider than others, especially, for the cough, whereas, the children of 'other religion' that consist of Christians, Shiks, Jains, Buddhists etc. are significantly more likely to be taken for consultation with private practitioners for both the diseases. As these religions have different world view towards life, it is difficult to identify any plausible reason behind this. More educated mothers are more likely to seek care for their children than their less-educated counterparts and the possible reason has been discussed earlier. The probability of not seeking any formal treatment for their children is higher by almost ten percentage points among women with no education compared with women more than middle schooling for both the diseases. Similarly, the probability of consulting a private provider for ailments of their children is almost nine percentage points higher among higher educated mothers compared with mothers with no education. This supports earlier findings on the positive effect of maternal education on child

health and survival in India (Caldwell and Caldwell, 1988; Cleland, 1990; Goodburn *et al.*, 1990; Barrera, 1990; Govindasamy and Ramesh, 1997). But it is worthwhile to note that both educated and uneducated women overwhelmingly consult private providers rather than private providers. Mothers from relatively affluent households are more likely to seek care for the ailments of their children and significantly more likely to consult private providers than others, even after controlling all other variables. This reveals the sorry state of public sector health facility in India and those who seek treatment irrespective of their income status must visit private provider for consultation. The adjusted probability of not seeking any treatment for their children declines from 35.4 percent to 29.6 percent in case of diarrhoea. Decline is steeper for cough. Though the majority of mothers consult private providers for treatment of their children, the gap between the poor and the rich is considerably high (more than 10 percentage points) regardless of type of disease. Though, the relationship is not statistically significant, it can also be noted that treatment seeking in public sector decreases sharply as living standard of the household increases. Researches in India and other cross-national studies in developing countries suggested that there is negative relationship between maternal work and infant and child survival (Hobcraft et al., 1984; United Nations, 1985; Zachariah, 1994; Basu and Basu, 1991; Sivakami, 1997; Pandey *et al.*, 1998; Kishor and Parasuraman, 1998; Ghosh, 2003) but the relationship between the maternal work status and treatment seeking behaviour for their children is not clear. This study found that the working mothers are significantly less likely to seek treatment for their children than their non-working counterparts, even after controlling all other variables. It has also been observed that the seeking care in the public sector for the children is higher for the working mothers, whereas, it is private sector in case of non-working mothers. This supports the earlier findings just mentioned above. After controlling other variables, a positive relationship between mass media exposure and treatment seeking in any formal sector has been established. Treatment seeking in both the public and the private sector has increased significantly if the mother is exposed to any sort of mass media. The increase is sharper in case of treatment seeking in the private sector, especially, when the child is affected by the cough. This shows that perceived severity and seriousness about the diseases increases significantly due to the messages displayed in the media.

5. Conclusions

Three major findings emerge from this study. First, the prevalence of child morbidity is considerably high in India as in other

countries of South and South-East Asian Region (SEAR). Secondly, among children surveyed in India almost two-third of those who had common childhood illnesses like diarrhoea and cough, sought formal medical treatment. The proportions seeking care significantly varied according to residence and by demographic and socioeconomic groups. Thirdly, treatment taken only from the public sector health facility is quite lower than that of private sector health facility, majority of children who sought treatment, irrespective of their demographic and socioeconomic characteristics did so from private providers.

These findings should be interpreted in the light of a few potential limitations of the data. First, the spell of morbidity is always subject to change with seasonal variations. So, the prevalence of morbidity, as seen in the NFHS, may not represent the actual scenario prevalent in India. Secondly, treatment seeking behaviour for any illness also depends upon *perceived severity* of that particular disease; this has not been considered in the analysis (though discussed as plausible factor whenever necessary), as data on it are not available. Thirdly, seeking care, especially in the rural areas, also depends on the accessibility and availability of health facility. *Distance to the health facility, inconvenience of hours of operation, perceived cost and opportunity cost to utilize services etc.* are factors that influence accessibility. But these factors could not be taken into account due to the limitation in data set. This could, to some extent, affect the estimates of influence of various variables obtained here.

What are the policy implications of these findings? First of all, effective policies and programmes are urgently required to reduce the occurrences of these two most fatal childhood illnesses as episodes of these diseases early in life can have adverse effects over the entire life cycle. Diseases in infancy could have long-term effects in terms of both cognitive and physical infirmities. Poor health directly reduces cognitive potential and indirectly undermines schooling through absenteeism, insufficient attention to lessons, and early dropouts. The policies and programmes may include access to clean water and sanitation, safe and adequate housing, medical care including insurance, information about symptoms of the diseases and preventive behaviours, and adequate nutrition to children, especially, for the rural poor and underserved urban children.

Secondly, more investment in public sector health facility, improving the quality of services and reduce urban bias in healthcare delivery are very essential. The analysis shows a strong preference for higher level private facility for treatment of common childhood illnesses irrespective of the

background characteristics of the children. The large-scale casual absenteeism, short working hours, and non-residence at headquarters among the lower level health workers, as documented in several studies (for example: World Bank, 1995), may be responsible for the infrequency of consultation. Again, it is worth mentioning that the share of public health expenditures in India is considerably low and the out-of-pocket expenditures of households are substantial, and given a highly unregulated private health market, the masses suffer substantially. Apart from direct investment the government has also to ensure the quality of care, establish more healthcare delivery centres in rural area and to play very vital role in broadening the information network across the country on the issues like signs and symptoms of various common childhood illnesses, its prevention and treatment so that awareness among people in the remote areas can also be enhanced.

Thirdly, as the preference to consult private practitioners is high among all the sections of population, as mentioned earlier, the Government should enhance participation of private sector and NGOs in healthcare sector and go for public-private compact in delivering basic healthcare services. It is worth noting that public provisioning, however, is not always the best solution when institutions are weak due to lack of government resources and management. The experiences of developed countries suggest that the basic services should be comprehensively provided by the state early on, followed by more targeted interventions, and then public-private partnerships to serve different market, including healthcare, and different sectors of people (HDR, 2003). A compact between public and private/NGOs is essential to augment the healthcare services on a need based approach not only in India but also amongst the developing world and the nature of association as comprehended is complementary and not contradictory.

However, this does not mean that the services delivered through such arrangements will definitely reduce the burden of child morbidity or that proportion of children for whom these preventable diseases continue to be a threat are able to access it better. Lastly, it is to say that comprehensive multifaceted child health progammes with strong political will can only reduce the prevalence of child morbidity and provide effective treatment to the affected children.

Notes

1. Primarily treatment seeking for cough was obtained in the data set; but if the child was suffering from cough along with fever and short, rapid breath, the treatment seeking in those cases were also obtained and the analysis included all these components associated with cough.

2. Interpreting results is more difficult from multinomial logistic regression than from binary logistic because multiple equations are used. In this case, predicted values can be used to aid interpretation.

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