

Dynamics of Risk Determinants Regarding Diarrhea Affected Slum Children in Urban Dhaka: A Dysfunctional Health Care System

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Abstract: This study attempts to focus on the socio-cultural risk determinants of health behavior which is closely associated with the severity of persistent diarrheal illness among fewer than five children. It is a dominant cause of childhood mortality and frequent faltering of infant growth of underprivileged slum children in Bangladesh. A community based cross-sectional survey was conducted on 109 mother-child pairs of 0-59 month old children at Agargaon slum of Mirpurzone in metropolitan Dhaka from July to August 2008. An explanatory model of Health Care System (HCS) was applied to explore the nature of health care practices during diarrheal episodes which incorporates conventional folk traditions (*Fakir, Kabiraj, Hujur*), popular (lay and non-professional such as family, community etc.) and professionalized traditions (modern scientific medicine) among slum women and justify the functionality of three components of HCS in relation to the risk factors associated with diarrheal treatment of respondents' children. The findings of this study indicate that various socio-cultural factors such as unhygienic conditions (garbage, offensive smell, unclean utensils, ineffective hand washing, flies and mosquitoes etc.), eating stale and stationary food (biscuits, cake and bread) from vendors or roadsides, limited breast feeding practices, unsafe drinking water and gender discrimination in providing treatment are frequently noticed in slum areas which drive under five children to high risk of persistent diarrhea.

Keywords: Diarrhea, health care system, hygiene, risk, slum

INTRODUCTION

The prevalence of mortality and morbidity among the children aged less than 5 years is a perennial and critical problem in both developed and developing countries. One of the most dominant risk factors associated with childhood mortality and frequent cause of faltering growth of children is the existence of diarrheal episodes, killing nearly 2 million children under age 5 every year (Vesikari, 1997). Besides, diarrhea is the most commonly associated illness with malnutrition especially when it is severe, recurrent and/or chronic. The prevalence of diarrhea among children in Uganda is estimated to be 20% and URTIs to be 23% (Uganda Bureau of Statistics, 2002). In South Africa, diarrhea is one of the five most common illnesses and is also one of the major causes of death among infants and children aged less than five years, accounting for 16% of infant deaths and 20% of all child deaths in 1995 (Bradshaw *et al.*, 2001). In Nigeria, the prevalence of diarrhea was found to be highest among children aged 6-12 months, the period when most children are weaned (Ekanem *et al.*, 2001; Huttly *et al.*, 2003). The incidence of diarrhea is higher in the second half of an infant's life, when inborn immunity is weaker and exposure to contaminated weaning foods is increased. In Bangladesh the risk of death is nearly 30% among children who are admitted to the Intensive Care Unit (ICU) because of

complications associated with diarrhea, whereas the death rate among hospitalized children with uncomplicated diarrhea is less than 1% (Mitra *et al.*, 1997). Moreover, infectious diseases such as diarrhea and acute respiratory infections are a cause of more than two-thirds of all death in children aged less than one year annually in Bangladesh (Mitra *et al.*, 2001; Baqui *et al.*, 2001). Major portion of slum children in urban Dhaka is frequently suffered from severe diarrheal illness which is precipitating malnutrition and faltering infant growth those who are aged less than five. Major portion of diarrheal patients from Mirpur, Baddha, Tongi, kafrul, Malibug, Mogbazar, Mohammodpur and Narayongong district were gathered to seek treatment in ICDDR'B hospital at Dhaka city. In a recent study shows that 9% of neonatal, infant and child deaths resulting from the prevalence of diarrhea were found in Kamrangir Char slum areas in Dhaka city (Manoshi, 2009). It was reported that 29 diarrheal patients (children, male and female) admitted per h in the ICDDR'B hospital at Mohakhali (Staff Correspondent, 2008). Major portion of them are underprivileged and resides in filthy slums at nearest Dhaka as well as deprived of pure drinking water, sanitation facilities, healthy environment, hygiene knowledge, standard food habits and medical facilities (Saha, 2008). Number of severely affected diarrheal patients had been gradually increasing since last years. Merely on April in 2007 and 2008, it was 8451 and 13932, respectively

(Staff Correspondent, 2008). In a study, Baqui *et al.* (2001) assert that, in Bangladesh, infectious diseases such as diarrhea and acute respiratory infections are a leading cause of more than two third of all deaths in children aged less than one year. Most of these victims died as a result of dehydration. Although dehydration is still a leading cause of death in diarrheal patients and several other factors such as pneumonia and malnutrition have been identified as important risk factors of death in hospitalized patients with diarrhea in Bangladesh. Moreover, the highest prevalence of diarrhea related mortality and morbidity in Bangladesh is frequently noticed among the underprivileged children of slum dwellers who are aged less than 5 years (Saha, 2008). So the foremost goal of this study is to explore the dynamics of risk determinants which influence the prevalence and severity of diarrheal illness of slum children. And at the same time the nature of function of health care system was assessed in relation to diarrheal episodes. Because diarrheal incidence among fewer than five children lead sometimes to death are not merely in Bangladesh but seemingly a crucial factor of infant mortality in rest of the world.

Risk of racial-gender disparity among children hospitalized with diarrhea: Racial discrimination is particularly marked as a consequence of decades of apartheid policies, which served to benefit the white minority at the expense of so-called non-white groups in South Africa (Marais, 1998). In spite of the diffusion of modern medical treatment, diarrheal illness is still a leading cause of mortality and morbidity in children aged less than five years in the African region. In a report of WHO reveals that each child in at region has five episodes of diarrhea per year and that 800,000 children die each year from diarrheal illness and dehydration (WHO, 1996). It is widely recognized that exposure to diarrheal diseases in developing countries is determined by that factors such as age of children, quality of water, availability of sanitation facilities, housing conditions, level of education, economic status of households, place of residence, feeding practices and personal or domestic hygiene etc., In addition, substantial racial disparities in the prevalence of diarrhea exist, with the black: white rate ratio amounting to 6:5 in 1998 (SADHS, 1998). Racial disparity in the prevalence of diarrhea occurs due to differences in behavior, environment and socioeconomic factors. Furthermore, high standards of hygiene, including access to safe drinking water and sanitary toilet facilities, are directly associated with a reduced risk of diarrhea (Rao *et al.*, 2001). Since the black and colored populations were forced, under the apartheid regime, to reside in poor townships and

distant rural areas apart from any piped water and sanitation services, it is probable that racial disparity in access to such essential necessities contribute to the higher level of the prevalence of diarrhea among them (Choi, 2003). Moreover the legacy of apartheid policies and racial income inequalities in South Africa contributes to racial differences in the prevalence of diarrhea in South Africa. It is well recognized that the black population was the most underprivileged group and a sizeable number of them still lack access to safe drinking water and sanitary services for the disposal of wastes. Besides, the average level of education among the black population was significantly lower than white and the risk of diarrhea being highest among black infants. However, the advantage and benefits enjoyed by the white population compared to the black population remained unexplained. Even the age and sex of child, breast-feeding practice of mothers, residential status, the quality of water, sanitation, floor materials of the dwelling had significant to the risk of diarrhea than the black population. The dominant risk factors of hospitalized female children in Bangladesh are associated with the devoid of immunization, severe malnutrition, electrolyte imbalances and invasive or persistent diarrhea. Moreover, biologically females have a greater chance of survival than males. Anyway it is unanimously coincide that females experience their greatest mortality with low life expectancy, whereas males experience their greatest mortality in industrialized societies. Some biomedical features are associated with an increased risk of premature death among female children in Bangladesh. These risk determinants included increased body temperatures, quicker respirations and invasive stool pictures. Also, girls have a significant delay in intervention for their illness than boys, which indicates social discrepancy and gender partiality for healthcare services. It is evident in the study of Mitra *et al.* (2000) that, female children with severe illness and diseases were also brought less frequently to the hospital compared to male children as shown by the proportion of females and males admitted to the ICU (37 vs. 63%). Despite the biological strength of the female children, frequent negligence of a girl child at home may still make her more vulnerable to severe illness through malnutrition. Moreover, a community-based study in Bangladesh shows that there is a linear association between higher malnutrition and increased death among female children and male preference for better healthcare and better share of foods in the family (Baqui *et al.*, 1998). It is evident that the female children experience more severe infections, illness and death more frequently than their male counterparts as a result of delayed initiation of care and protracted illness before admission. In their study, Gouws *et al.* (2005) identified

gender disparities favoring males in diarrheal treatment practices among the wealthier, non-slum city corporation households in Dhaka and Chittagong where the prevalence of diarrheal illness was lowest and the occurrence of prolonged diarrhea was greatest within urban slum households affecting one-quarter of the children identified.

Risk of hygiene, food habits and breastfeeding practices to diarrheal illness:

The incidence of diarrhea is characterized by the conditions of both personal and environmental hygiene around the surrounding environment. In Ethiopia, the prevalence of diarrhea is much higher in the school when inborn immune power is weaker and exposure to contaminated weaning food is boosted (Yohannes *et al.*, 1996). It is evident that children living in households with a little sanitation facility are less likely to be ill than children in households without any sanitation facility. In case of Ghana, the risk of having diarrhea is notably associated with sanitation facilities and about 50% children living in house without this hygiene facilities are exposed to such kind of risk (Tagoe, 1995). The prevalence of diarrhea varies in terms of the educational qualification of mother, being significantly lower among the children of higher educated mothers than among the children of mothers with primary or no education. Because higher education provides better hygiene knowledge, feeding and weaning practices, the interpretation of symptoms and enhances well-timed action to childhood illness. In addition, the regular refuse-disposal practices deepen the incidence of diarrhea in children aged less than 5 years in urban slums. Such poor refuse-disposal practices incorporate throwing domestic and industrial litters; refuse dumps as well as medical wastes in anywhere tend to expose children to serious health hazards as they play around these contaminated areas. Moreover, indiscriminate snub disposal can catch the attention of flies which serve as infective agents of diarrheal diseases. It was found in Uganda, combining both rural and urban areas, has demonstrated that 75.2% women thrown their domestic garbage anywhere around the homestead and 20.4% thrown in compound pit (Mbonye, 2004) which bears innumerable risk of diarrheal pathogens. Another risk such as defecation in anywhere is strongly associated with random waste disposal especially when this is done near the vicinity where the child plays or is fed. Most of the slum environment adjacent to Dhaka megacity or suburb in Bangladesh is featured by unsanitary conditions, including poor water supply and poor drainage systems,

unsafe domestic or industrial waste disposal and overcrowding situation resulting in poor personal and environmental hygiene. Infants and young children of these slum women are continually exposed to health hazards associated with such unsanitary environment. It is likely that domestic and environmental hygiene practice may be the dominant ingredients in the occurrence of diarrhea. Moreover, some visible risk determinants in slum areas such as the type of kitchen, dirty feeding bottles, disposal of household garbage, unhygienic latrines, eating from floor, food from vendor, use of non-purified water and poor storage of drinking water are increased the risk of diarrhea. In addition source and the quality of everyday drinking water in urban slums are questionable and the situation has recently generated a great deal of concerns among the public health authorities. Regular consumption of water and food from this doubtful source is strongly associated with diarrhea. In a study Ekanem *et al.* (1999) found that food bought from vendors has been associated with protracted diarrhea in the Nigerian children. Thus, food vendors in both slum areas and market places play a considerable role in transmitting enteric pathogens which cause diarrheal illness in children. It is pertinent to say that food traders of different vendors often sell the leftover foods of previous day and this is the major cause of childhood diarrhea among slum dwellers in Dhaka city. In addition a significant association between effective hand washing practices and the incidence of diarrhea was found in Mbonye (2004) which shows that 16.7% washed their hands before preparing foods and 73.3% didn't at all wash hands before handling food. Another factor influencing childhood diarrhea aged less than 5 years is exclusive breast feeding practices of mother. Exclusive breastfeeding means that the infants receive no solids or liquids apart from breast milk with the exception of vitamins, minerals, or medicines (WHO, 2000) and infants should be exclusively breastfed for the first six months of life and it continued throughout the year could check 1.3 million infant deaths throughout the world (Jones *et al.*, 2003). Infants who are exclusively breastfed are less likely to be exposed to unhygienic foods and liquids and this lead to the reduction of the incidence and severity of infectious diseases or acute respiratory infection like diarrhea (Mihirshahi *et al.*, 2007). BDHS (2004) shows that 38% of children aged 2-3 months are exclusively breastfed after born whereas 30% of infants aged 2-3 months are being bottle-fed and 23% of children are given complementary foods. Belated initiation of

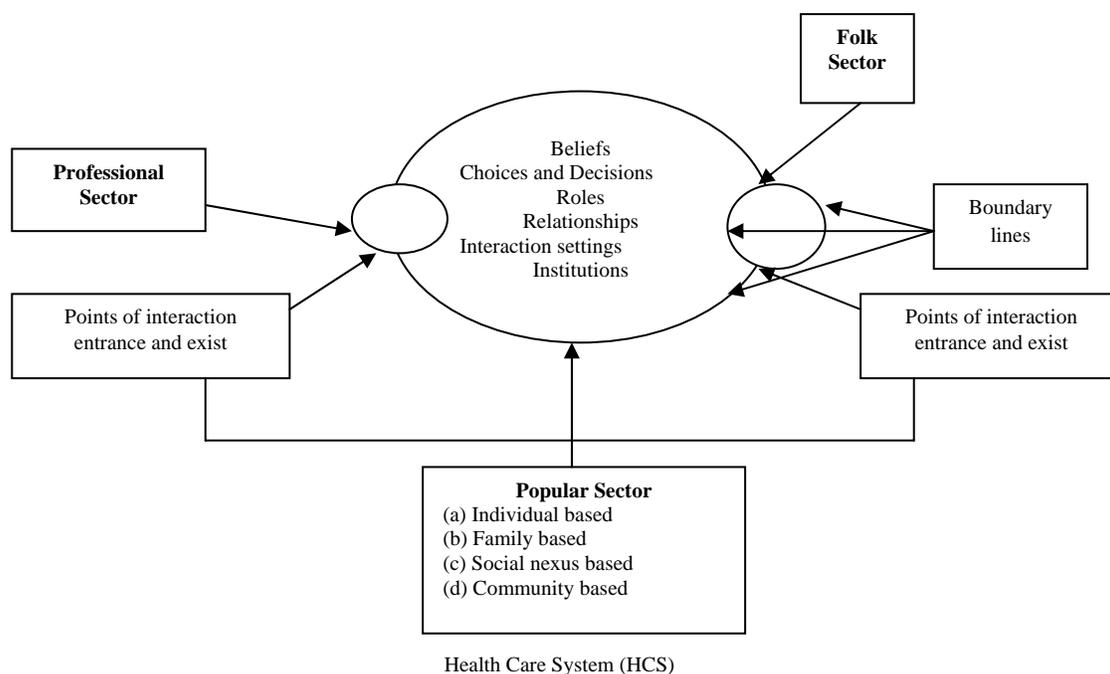


Fig. 1: A schematic outline of health care system proposed by Kleinman (1978)

Breast feeding practices among mothers was common but this rate of initiation has improved in recent years.

THEORETICAL FRAMEWORK

The health care system: The explanatory model of Health Care System (HCS) is one of the oldest frameworks for the cross cultural studies of health care system which was developed by Kleinman (1978) in order to delineate an internal nexus among diseases/illness, cultural healing and health care system. The HCS goals to understand health, illness and healing practices in modern urban society as a cultural system/or the impact of culture on sickness and provide a schematic device for describing cross cultural comparison among existing medical care systems. In this regard, Kleinman (1978) advocated that “the health care system articulates illness as a cultural idiom, linking beliefs about disease causation, the experience of symptoms, specific patterns of illness behavior, decisions concerning treatment alternatives, actual therapeutic practices and evaluations of therapeutic outcomes.” In addition, beliefs and behaviors to health and specific illness in a particular social setting are governed by some sort of socially permitted precepts and principles that make health care system more functional and effectual. Most of the health care systems, proposed by Klein man, in any transitional

society broadly incorporate three distinctive socio-cultural spheres within which one can experience physical illness/sickness and spontaneously response to indispensable health care practice (Fig. 1). These are popular sector, folk sector and professional sector. The ‘popular sector’ of health care predominantly encompasses individual, family, social network and community which are acknowledged as lay, non-professional and non-specialist domain of transitional society. In this popular domain illness/sickness of health is first recognized, defined and subsequently health care activities are initiated. In most of the western and non-western societies, about 70 and 90% physical sickness/illness is cured within this domain (Kleinman, 1975; Zola, 1972). Most of the decisions regarding when and whom to consult along with the most lay evaluations of the treatment are made in this domain. And then the domain and functional aspects of ‘folk sector’ is fairly bulky in the developing societies comprises of healing specialists that is categorized by ethnographer into secular and sacred healer (Fakir, Darbesh and Hujur), tooth extractor, venom remover and purely magical performers etc. They share the basic values and ideas of the community in which they live including beliefs about the origins, significance and treatment of sick health. A sense of togetherness, tenderness, informality, use of diurnal language and aptitude to provide culturally recognizable elucidations

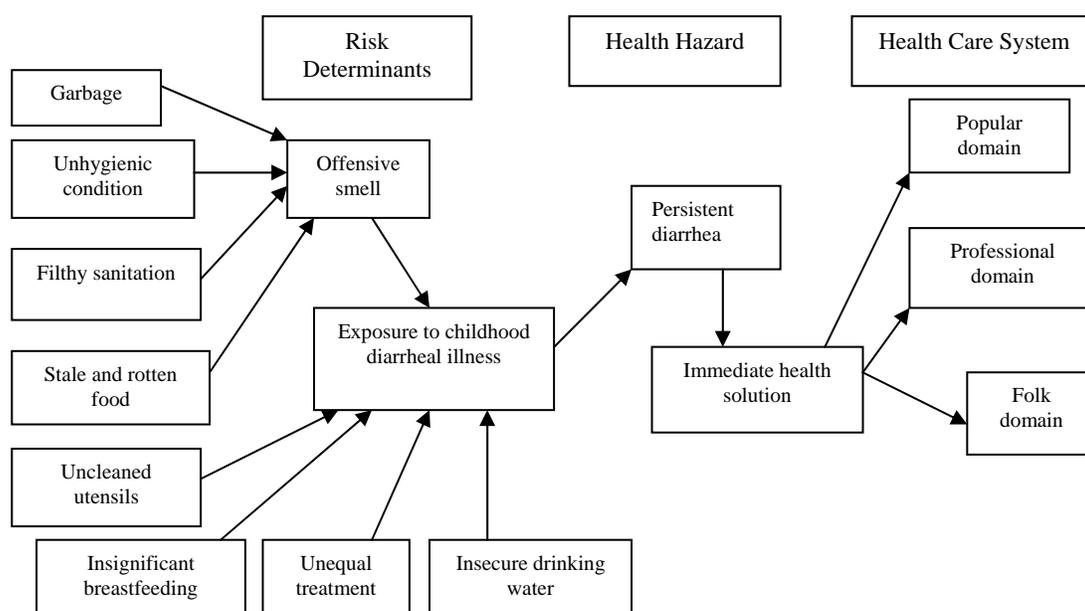


Fig. 2: Nexus between risk determinants and health care system

of ill health and its instantaneous upshots offer advantages of folk medicine over modern medicine.

The last domain of health care system- ‘professional sector’ encompasses with fairly organized and legally sanctioned modern scientific medicine and professionalized indigenous healing traditions such as Ayurvedic, Unani, herbal etc. This domain contains and assists in formulating some sorts of distinctive social reality (culturally constructed) as well as organizes socially legitimated beliefs and perceptions. People, who are not cured by self treatment in popular domain (family and community based) during illness, make choice about whom to consult in folk or professional sectors for further help. People may use both orthodox and alternative healers to treat their ill health, especially in the case of chronic illness. In this regard, the study attempted to unearth whether the decision makers of family (mother/father) seeks proper treatment for their diarrhea affected under five children either in popular, professional or folk domains of particular society. This explanatory model of health care system however was applied to explore the nature of individual prioritization in making decision about health care options for diarrheal treatment of fewer than five children among slum women in Dhaka city. Besides the model elucidates some socio-cultural determinants which exert significant influence on shaping parents decision in seeking treatment for their diarrhea affected children. In this study, results have been presented from the socio-cultural and behavioral perspective which was designed to provide a contextual scaffold for understanding local

meaningful interpretations and health practices of slum dwellers as well as provides a valuable conceptual and analytic tool for the investigation of local belief systems.

Linking risk determinants to health care system:

Risk sprouts from the established socio-cultural settings or environment, unaware human actions, relative deprivation of human needs and perceived faith to ingrained cultural practices which is continually imperiled individual or community life spheres. Risk of childhood diarrheal illness chiefly engenders from uncleaned utensils, taking stale and rotten food, insignificant breastfeeding practices, discriminatory stances to diarrheal treatment, unsafe drinking water, grimy and collective toilet facilities, domestic litters surrounding the households which give birth offensive smell, flies and mosquitoes etc., (Fig. 2).

Besides urban slums in modern metropolitan Dhaka where millions of denizen living with infinite crisis and endless collective troubles breed by the initiatives of so called urban development are treated as warren or right space for germinating such kind of health threatened risk determinants. As slum denizens are least resilient in terms of pecuniary solvency, health and hygiene knowledge, healthy urban milieu, medical facilities, ideal balance diet and available nourishment etc., their children are exceedingly vulnerable to or infected by health hazards like persistent diarrheal illness. Under this circumstance, the children of slum women living with or expose to persistent diarrheal

Table 1: Socio-demographic characteristics of mothers and diarrhea affected children

Socio-demographic	N = 109	(%)
Age of mothers		
15-25 years	38	34.86
26-35 years	53	48.63
36-45 years	13	11.93
45 years above	5	4.58
Marital status		
Married	97	88.99
Divorced	3	2.75
Separated	8	7.34
Widowed	1	0.92
Educational background		
No formal education	59	54.13
Primary	39	35.78
Secondary	9	8.25
Tertiary	2	1.84
Employment status		
Housewife	64	58.72
Employee	7	6.42
Seamstress	38	34.86
Age of children		
0-1 year	32	29.36
2-3 year	52	47.71
4-5 year	25	22.94
Diarrheal episodes (last one year)		
1 time	87	79.82
2 times	21	19.27
3 times	1	0.92
3 times above	--	---

illness need immediate health solution or proper treatment in order to evade death risk as it drive to either mortality and morbidity or undernourishment at infant stage of offspring. So the normal penchant of human behavior related to seek out right health treatment for diarrheal sickness is to search expected proper care in above stated three domains of HCS.

MATERIALS AND METHODS

The study was conducted in one urban slum adjacent to Dhaka metropolitan area. A structured questionnaire was administered in order to obtain quantitative data from the sampled respondents. Agargaon slum area under Mirpur Thana (a local administrative unit), located in central Dhaka was selected as study site. With an aim to arrange this work in a representative manner, 109 childbearing mothers who had children aged less than 5 years were selected purposively as study sample in this research. Relevant information is also collected from the reviewing of secondary literature including books, journals, annual reports and newspapers etc. Statistical analysis used SPSS for Windows Version 11.5.

RESULTS AND DISCUSSION

Background of mothers and diarrhea affected children: From the field survey, 48.63% of the women were between the ages of 26-35 years and 34.86% of the women were between the age group of 15-25 years

(Table 1). This means that a majority of the mothers were in their youth and were likely to give birth to children. Majority (88.99%) of the women interviewed, were married (Table 1). These married women were high possibility of giving birth and therefore more likely to chief care taker of their offspring. About 54.13% of the mothers had not attained any forms of formal educational institutions in their lifetime. The results of the findings represent that 35.78 and 8.25% of the mothers had passed primary and secondary education, respectively. Though higher level of education enhances hygiene and health knowledge but only 1.84% of the mothers were obtained tertiary education. Generally lower than half (45.87%) of all respondents had primary, secondary and tertiary or higher education. Only 6.42% of all mothers were worked as employee in school, NGOs and one charity organization while 58.72% of the mothers were involved in household chores. As few of them had scarce higher education and lived with severe economic hardship, a significant portion (34.86%) of all mothers performed work as maid servant in different city dwellers and nearest Mirpur market. It should also mention here that 29.36% of the children were between the ages of 0-1 year, 47.71% of the children were between the ages of 2-3 years and 22.94% of the mothers were 4-5 years. Among of all children, their mothers responded 79.82% offspring were suffered at least one time from diarrheal episodes in last one year while 19.27% offspring suffered at least two times and very few (0.92%) of them suffered more than two times from diarrheal incidence

Risk determinants associated with childhood diarrhea:

The major risk generating determinants of persistent diarrhea at early stage of childhood are presented in Table 2. The findings of the study revealed that diarrheal risk of slum children aged less than five sprouts from the offensive smell of dumping industrial and domestic litters surrounding the residence of slum dwellers. Because Ready Made Garments (RMGs), chemical industries, dying industries, slaughter houses, local markets, hospitals and private clinics dump their everyday waste and disposable materials which generate obnoxious odor in slum areas and contaminate living atmosphere. In this study a significant portion (43.1 and 40.4%) of child bearing mothers responded that their living houses were adjacent to the heap of this garbage and come noxious smell always and sometime respectively. They also informed the condition deteriorates in rainy season when rain water melts solid garbage and filthy noxious water enters into their house. This unpleasant smell of garbage creates severe dyspeptic problems for both children aged less than five

Table 2: Percent distribution of risk determinants associated with childhood diarrhea

Variables	N = 109	(%)
Offensive smell from garbage		
Always	47	43.10
Sometime	44	40.40
Very scarce time	18	16.50
Pattern of latrines		
Sanitary	6	5.51
Bamboo made	68	62.38
Open	35	32.11
Offensive smell from latrines		
Always	46	42.20
Sometime	43	39.40
Scarcely	20	18.40
Prevalence of flies and mosquitoes		
Always	89	81.68
Sometimes	13	11.92
Very scarce	7	6.40
Use of soap/ash/detergent after defecation		
Yes	63	57.80
No	46	42.20
Effective cleaning of child utensils		
All time	6	5.50
Sometimes	50	45.88
Scarcely	53	48.62
Effective washing of child hand		
Always	27	24.78
Sometimes	49	44.95
Scarcely	33	30.27
Source of drinking water		
Tap	108	99.10
Dug well	1	0.90
Tube well	--	--
Drinking of boiled water		
Always	--	--
Sometimes	10	9.20
Never	99	90.8
Sources of stationary food		
Vendor	73	67.00
City market	23	21.10
Homemade	13	11.90
Feeding of stale and rotten food		
Always	18	16.50
Sometimes	39	35.70
Never	52	47.80
Gender disparity in child treatment		
Son	69	63.47
Daughter	40	36.53
Exclusive breastfeeding practices		
Yes	78	71.56
No	31	28.44

and their mothers. But there was very little number (16.5%) of residence which scarcely freed from filthy smell of garbage and less associated with persistent diarrhea. Though better sanitation and toilet facilities ensure the prospect of healthy or diseases free life but a little portion (5.51%) of child bearing mother in that slum and their family members used sanitary latrines. Because of economic hardship, little hygiene knowledge, unfixed urban dwelling and slight space, 62.38 and 32.11% slum denizen were used to bamboo

made and open toilets, respectively. Besides the ownership of most sanitary, bamboo made and open latrines were collective and used by the slum denizen. Due to collective ownership the majority of the latrines were always remained filthy and walking distance from living home. And these grubby latrines always (42.2%) emitted and diffused highly unpleasant odor within slum areas and polluted salubrious living environment. More than one third (39.4%) of child bearing mothers told that noxious smell from nearest latrines sometimes came into their living home and caused persistent diarrhea of their under five offspring. In addition dumping of waste, unsafe open latrines, humid environment, piling of hawker materials, discrete of domestic animals and crowded living conditions were dwelling space of flies and mosquitoes in that slum. The result of the analysis showed that the highest proportion (81.68%) of surveyed household's was always vexed with the prevalence of flies and mosquitoes that was being the reason of exasperating during child feeding. Furthermore hygiene knowledge of child bearing mothers and their offspring also influences the prevalence of childhood diarrheal disease and other illness. In case of personal hygiene, it was found that 42.2% child bearing mother whom children were suffered from diarrhea would not use any sort of detergent, soap, ash or hand washing materials after their children (mother washes their children after defecation) or self defecation. As low as merely 5.5% child bearing mothers were always cleaned their child utensils more effectively that is less threatening for diarrheal diseases. It is also revealed from the analysis that 48.62 and 45.88% mothers were cleared child utensils very scarcely and sometimes, respectively. This lower prevalence of personal hygiene practices and less effective cleaning of utensils produces high incidence of diarrheal risks for their children.

Though practices of hand washing before eating may reduce germ infection and future incidence of diarrheal illness but merely a lower portion (24.78%) of mothers were found who effectively cleaned hands of their offspring before meal taking. It is alarming that 44.95 and 30.27% of mothers in that slum were practiced effective hand washing in sometimes and very scarce time, respectively. And this lower practice of hand washing exposed greater risk to dyspeptic problems or diarrheal episodes. Almost all (99.1%) of the interviewee who took part in survey gathered supply water from tap for their everyday drinking which is generally recognized as unsafe and having detrimental effect on health. Child bearing mothers reasoned this supplying water provided by Dhaka WASA (Water

Supplying Authority) is sometimes contaminated by bad smell and lichen. Though they could sometimes sieve moss mixed water but rarely could remove bad smell from drinking water. Besides no single mother would found who could always feed boiled water to their children. Because of their economic hardship merely 9.2% mothers could able to collect fueling materials and feed sometimes boiled water to their children. Results of the analysis represent that a significant portion (90.8%) of child mothers would never feed boiled water to their children. Regular feeding of un-boiled water would exacerbate the incidence of diarrheal disease of slum offspring. Though food from outsides is highly threaten to dyspeptic problems but 67% mothers told that they brought stationary food from vendors adjacent to roadside and 21.1% bought from nearest city markets. Discussion with mothers betokened that most of the diarrhea affected under five children was eaten stationary food of hawkers and nearest city markets such as biscuits, cake, chocolate and stale bread etc. Only 11.9% mothers were found in that slum who prepared stationary food such as bread (made by flour) and cake in the home for their small children. It was the matter of concern that 16.5 and 35.7% mothers were feed stale and rotten foods (rice, curry, vegetables and pulse) always and sometimes, respectively. The findings of the study revealed that 47.8% mothers were conscious regarding the association between diarrheal disease and feeding of stale foods and would never feed stale food to their children. Again the findings represented gender discrimination as 36.53% female children got priority in diarrheal treatment whereas 63.47% male children got privileges of this curative treatment. It was found in the study that a major number (71.56%) of child bearing mothers were exclusively breastfed their offspring than others (28.44%). Because exclusively breastfed babies were less likely to suffer from diarrheal episodes and malnourishment than those were not breastfed or are partially breastfed.

Components of health care system and diarrheal treatment: People in any traditional society, in accordance with HCS proposed by Kleinman (1978) generally seek curative treatment for their ill health in three domains of health care such as professional, popular and folk domain that is guided by rational decision of patients. Though these three domains of health care coexist in a conventional society but it differs in most cases on the basis of space and time. Because people who live in urban milieu in post

Table 3: Percent distribution of health care system associated with childhood diarrheal treatment

Variables	N = 109	(%)
Seeking health care		
Professional domain	102	93.58
Popular domain	7	6.42
Folk domain	--	--
Professional domain		
Ayurvedic	--	--
Unani	--	--
Homeopathic	--	--
Hospital	21	19.27
Pharmacist/drug seller	64	58.71
Physician	17	15.6
Folk domain		
Kabiraj	--	--
Fakir/darbish	--	--
Hujur	--	--
Popular domain		
Individual	--	--
Family	7	6.42
Community	--	--
Society	--	--

modern time is gradually getting the touch of update scientific inventions of health treatment which is altering traditional notions of health care based on ingrained trusts and fallacious reasoning. The results of the study revealed that almost all (93.58%) of mothers sought to diarrheal treatment for their under five offspring in professional sector of health care in which 58.71% mothers went to nearest pharmacist or drug sellers to take health care and medicine such as saline and zinc tablets (Table 3). Amongst them those who were partially solvent and aware about health went to city hospital (19.27%) such as ICDDR'B and expert private or government physicians (15.6%). Though HCS argued 'professional sector' also comprises with indigenous healing traditions such as Ayurvedic, Unani and herbal medicine but there had not found any single mother who would go or seek treatment for diarrheal illness to these healing specialists. Rather they sought curative treatment to legally sanctioned modern scientific medicine, doctors and hospitals. Mothers reasoned these herbal medicines and healing traditions such as Unani, Ayurvedic etc., were quietly ineffective for diarrheal treatment rather feeding of these medicines might endure diarrheal incidence or further risk. In addition herbal medicine was not widely recognized by slum people as a means of diarrheal treatment. This least acceptance of herbal treatment for diarrheal recovery was influenced by rational decision of children mothers whether they would go to herbalists or not. Apart from it, innovative scientific medicine and available laboratory treatment in nearest hospitals such as ICDDR'B, drug sellers and local doctors achieved broader spectrum of social acceptability and mass people seek scientific treatment to these centers than herbal centers.

The second domain of HCS, *folk sector* incorporates broader spectrum of sacred healers such as *Kabiraj, Fakir/Darbesh* and *Hujur* etc., which is guided by people beliefs, perceptions, attitudes and local interpretation of particular treatment prescribed by healers where people seek curative assistance for their ill health. But there was no single mother who had ever gone or sought treatment to these sacred healers for diarrheal illness of their children. Though this domain is governed by community faith and socio-cultural settings but in that slum women were guided by rational principles, urban attachment, modern scientific facilities and got scientific guidelines from expert physicians where there was no space of any fictitious faith and detrimental prescriptions. Though Kleinman (1975) reasoned 70 to 90% physical illness in traditional and non-traditional societies was cured within popular domain but very few (6.42%) of all mothers argued they were barely treated their diarrhea affected ill offspring within the family. Most of the mothers thought that popular sector was lay and non-professional space of health care and they were quietly reluctant to treat their children at community, society and individual level.

CONCLUSION

From above findings and discussion it becomes clear that frequent diarrheal episodes is a most severe cause of faltering infant growth in metropolitan slum of Dhaka city where denizens dwell with risk atmosphere sprouted from warren condition, industrial expansion, sanitary crisis, insufficient drainage facilities etc. This unsafe environment breeds the risk of health hazard for new born babies and aggravates the prevalence of childhood diarrheal incidence. In compare to other residential areas, overcrowded slums in Dhaka city like Mirpur slum are highly convenient spaces for generating risk determinants of diarrheal illness. Because most of the slum has gradually built in unused empty space (private or government) and regarded as suitable place for over crowd living without hygiene, sanitation facilities and dumping of urban domestic or industrial garbage. Unplanned drainage system often creates contaminated water stagnation in rainy season in that slum which diffused noxious smell and defile living environment. This messy slum environment give birth small disease bearing creatures like flies and mosquitoes. Besides, due to inadequate hygiene knowledge, slum women were absolutely unaware to keep up neat and clean the surrounding environment of living space. So, apparent close association among unpurified water, stale and stationary food items, germ-infested living space etc., and risk of diarrhea episodes

indicates that it may be taken an epidemic form at future. It is fact that production of diarrheal risk determinants is truly a continual and dynamic process. And the dynamic process of risk is creating danger to diarrheal incidence for slum offspring which is caused of frequent faltering growth and undernourishment at their infant stage. In addition the theoretical framework on which this study is predominantly based is a socio-rational framework, which can merely explicate individual decision and guided by conscious evaluations. It should speak here that some other components such as individual rationale, knowledge, awareness, attitudes, perceptions, myths, curative power of medicine, location of social settings, social acceptability of health care, personal judgment, laboratory based treatment, community practices and demographic factors may influence mothers choices and preferences in seeking health care for diarrheal illness. Unfortunately these components are not an indivisible part of this health care system. Besides sacred healing traditions which is based on conventional beliefs, practices and interaction settings as well as treatment in popular domain which is based on family, community, society or self are stand in stark to contrast of hospital based modern scientific medical care. Though people of urban slum in Bangladesh is still struggling against traditionalism but in case of health care they have been departed from conventional space and resorting to help in modern scientific domain.

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