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Role of Women's Empowerment in Determining Child Stunting in Eastern India and Bangladesh

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Abstract

This paper examines the relationship between women's empowerment and nutritional status of children. Data from BDHS (2007) and NFHS (2005-06) were used to examine the role of women's empowerment in determining child stunting in Eastern India and Bangladesh. Results revealed that stunting and chronic malnourishment were more among children in Eastern India than Bangladesh. Severe stunting was also more prevalent among children of Eastern India as compared with Bangladesh. Mother's body mass index, mother's age, sub-region, community, religion, wealth quintile and empowerment indicators (mother's education and decision making power) had significant association with child stunting. While women's empowerment played an important role to reduce child stunting mainly in Bangladesh, education, religion and sub-region had a strong effect on stunting in Eastern India. Policies related to educating and economically empowering women in both the regions may facilitate to improve the nutritional status of children and their health.

Key words: Women's empowerment, child stunting, Eastern India, Bangladesh.

"Woman must not accept; she must challenge. She must not be awed by that which has been built up around her; She must reverence that woman in her which struggles for expression." - Margaret Sanger

I. Introduction

Development and justice have become so intertwined in the new world order that the two aspects cannot be discussed separately. The utmost subject of priority for the discussion of justice with development is the marginalization of the vulnerable. Such groups in any society are children, women, poor, ethnic minorities and so on. The implications of continuing processes of development are more pronounced in the developing countries than the developed countries. To examine the subtleties of development and justice at its best, health sector is one important priority area where the differentials give rise to understanding inequalities. Health of the people forms an integral part of the process of development, an area to examine and observe how the dynamics of justice comes into play. Healthy populations are a foundation for sustainable social, economic and environmental development, and for peace and security. The fundamental right to the highest attainable standard of health, including physical, mental and social well-being, has been recognized in many global, regional and national declarations and charters. However, despite many advances over the previous decades, large numbers of disadvantaged people still suffer from ill health, with thousands dying every day from preventable causes. Children and women are even today being underserved in society making them more exposed to risk of ill health. Gender equality and women's empowerment are an essential human rights issues and vital to attain development objectives including health. Increase in women's political participation, control over resources, decision making power, employment and education are crucial for promoting sustainable

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development. Improved health outcomes for women, on the other hand, can help to strengthen their own agency and empowerment.

Women's Empowerment

A large section of women in the developing countries do not even achieve the modicum of development even though they are putting immense input for the development. Empowerment of women is not only an external process but also involves intrinsic changes in them. In the last five decades, the concept of women's empowerment has witnessed an overwhelming change from welfare to equity approach.

Women's empowerment is a multi-dimensional concept with disagreements in its definition and measurement (Agarwal, 1997; Duflo, 2012; Kabeer, 1994; Kabeer, 1999). It can be conceptualized as the power to make choices (Kabeer, 1994; Kabeer, 1999; Malhotra et al., 2002). It is characterized as an evolving process whereby women develop the ability to exercise agency and make strategic life choices in domains where they were not previously able to do so (Kabeer, 2005). According to Sen and Batliwala (2000), "empowerment is the process by which powerless gain greater control over the circumstances of their lives..." (p.18). Though women's empowerment is not a sufficient condition, it is still necessary in order to attain equitable and sustainable development.

The United Nations International Conference on Population and Development (ICPD) in Cairo (1994) and the Fourth World Conference on Women in Beijing (1995) outlined factors considered crucial to the empowerment of women (United Nations,1995; UNFPA, 2014). Mason and Smith (2003) constructed indices of women's empowerment based on three dimensions, viz., economic decision making, household decision making and freedom of movement. In their study, Malhotra et al., (2002) synthesized and listed the most commonly used dimensions of women's empowerment into six dimensions such as economic, socio-cultural, familial/interpersonal, legal, political and psychological, and later into three dimensions of economic decision making, household decision making and physical movement due to non-availability of data. However, in many circumstances women's empowerment is reflected in intra-household resource allocation, in household outcomes such as children's nutritional status (Doss, 2013), greater power of decision making, the absence of domestic violence, or a combination of these factors.

Child health

Along with women, special focus should also be given to children who are the future of any country. The foundation for future health, development and wellbeing of a child depends on the initial years of his/her life. A favourable start in a child's life may help him/her to reach full potential, while a gloomy childhood may mean adverse outcomes. The prime concern of any society would be ensuring healthy growth and development of the children who represent the future. There is a well-established evidence base to show that the first five years of a child's life, including the nine months of pregnancy, are critical to the cognitive and non-cognitive development and later life outcomes (Design Council, 2013). The physical and/or mental development of children can be hampered by poor nutrition during childhood and severely malnourished children might experience a substantially higher risk of mortality (Chen et al., 1980). Malnutrition in children, understood as under nutrition, is common globally and results in both short and long term irreversible negative health outcomes including stunted growth which may also be linked to cognitive development deficits, underweight and wasting. The main factors of child malnutrition are unsafe water, inadequate sanitation, insufficient hygiene, factors related to society and poverty, diseases, maternal factors, gender issues and overall poverty (Duggan, 2008). Stunting happens over time and can be caused by inadequate maternal nutrition, poor feeding practices or substandard food quality as well as frequent infections (Worley, 2016). Malnutrition is estimated to contribute to more than one-third of all child deaths (WHO, 2017). It is the salient source of 3.5 million deaths globally and responsible for 35 per cent of morbidities among children under five

(Black et al., 2008). There are three commonly used indicators of child nutritional status: stunting (extremely low height for age), underweight (extremely low weight for age) and wasting (extremely low weight for height) (Wagstaff & Watanabe, 1999).

Stunting is linear growth retardation and cumulative growth deficits. It is a height for age index and not a process that is easily attained (UNICEF, 2009). The height-for-age index is an indicator of linear growth retardation and cumulative growth deficits. Children whose height-for-age Z-score is below minus two standard deviations (-2 SD) from the median of the reference population are considered short for their age (stunted) and are chronically malnourished. Children below minus three standard deviations (-3 SD) from the median of the reference population are considered to be severely stunted (IIPS & Macro International, 2007). It is a process in which a child endures painful and debilitating cycles of illness, depressed appetite, insufficient food and inadequate care. Many children do not survive such rigours. Many of those who do survive carry long-term deficits in mental capacity along with losses in stature. Inadequate feeding and repeated illness are the immediate causes of stunting in a young child. It is a result of poverty and the consequent inability of families to adequately care for their children. A lack of clean water supply in a poor community, or a long distance between home and health clinic, for example, affects the level of care that can be given. Stunting can also occur due to poor nourishment of mother during pregnancy and when children are born underweight. Stunting and its effects typically become permanent once it is found in children. Stunted children may never regain the height lost. It affects close to 195 million children under five years of age in the developing world. Of these, around 61 million – the largest number - live in India (UNICEF, 2009).

It is argued that empowering women improves the well-being of a household and leads to better outcomes for children. Empowered women often make better decisions that benefit their own wellbeing and that of their children. Shroff et al., (2009) have demonstrated that women's empowerment is associated with better health outcomes. Women empowerment is also believed to be an important factor in determining the utilization of child health care services. Women are often the primary caregivers for their children. They can influence their children's health directly through intra-household resource allocation and childcare practices, and indirectly through their own health and nutritional status (Smith et al., 2003). Educated women have increased household decision making that may contribute towards better child health (Caldwell, 1979).

An understanding of the status and empowerment of women within their household as well as the society was crucial to explore its influential effect on child nutrition in the respective society or household. Based on this backdrop, this paper attempts to study how women through the process of empowerment nurture their children. Specifically, the paper aims to find out whether women's empowerment has any role in determining child stunting in Eastern India and Bangladesh.

Malnutrition remains a major concern in India despite the country's impressive record of economic growth. Similarly, poor nutritional status is one of the most important health and welfare problems in Bangladesh. Young children and women of reproductive age are especially at the risk of nutritional deficits and micronutrient deficiencies in both the countries. In India almost 48 per cent, close to half of the children aged below 5 years are stunted, 43 per cent are underweight and 20 per cent have wasting (IIPS & Macro International, 2007). Bangladesh Demographic Health Survey (BDHS, 2007) data show that 43 per cent of the children are stunted, 41 per cent are underweight and 17 per cent are wasted. Varma et al. (1996) noted that a child's vulnerability is enhanced, firstly by dependence on mother and other members of the family and social institutions for the fulfilment of his needs. Second, rapid growth and development during this phase places an additional burden on him. Research also shows that family composition, educational level and socio-economic conditions also affect his health. It has often been argued that child health and investments in children are determined by intra-household resource allocation decisions which are related to gender inequalities in the household. Determinants of child health and malnutrition in developing countries in general and India in particular highlight the significance of economic, social, cultural and/or infrastructural factors impacting at multiple levels such as individual,

household and community (Ackerson & Subramanian, 2008; Allendorf, 2007; Kandpal & McNamara, 2009; Kravdal, 2004; Smith & Haddad, 2002; Smith et al., 2003).

Why study Eastern India and Bangladesh?

The reason for choosing them was that prior to the creation of Pakistan in 1947, modern-day Bangladesh was an integral part of India. The eastern India comprising of West Bengal, Orissa, Bihar, Jharkhand and the whole of Bangladesh was together as a region since the historic times of Dharmapala and Devapala (Bhattacharyya, 1977). These two regions were also a part of Bengal Presidency in British India. West Bengal and Bangladesh together were known as Bengal. Cultural diffusion has taken place between West Bengal and the boundary region of Bangladesh (Rajshahi and Khulna). Even after independence, the cultural linkages between the two Bengals continued. Another major reason was that malnutrition is a persistent problem in both the countries.

II. Data source and methodology

Two data sets were used in this study. For Eastern India, the data set of National Family Health Survey (NFHS 2005-2006) and for Bangladesh, Demographic Health Survey (BDHS 2007) have been used. The sample designs and the questions asked in the survey were similar in these two data sets. These datasets have one record for every child of interviewed women born in the five years preceding the survey. It contains the information related to the child's pregnancy and postnatal care, immunization and health. Data for the mother of each of these children is included. This file is used to look at child health indicators. The unit of analysis (case) in this file is the children of women born in the last five years (0-59 months). The BDHS is a nationally representative survey which used a two-stage stratified sampling design to collect reliable demographic and health data. NFHS-3 adopted a two-stage sample design in most rural areas and a three-stage sample design in most urban areas. In each state, the rural sample was typically selected in two stages: the first stage involved selection of Primary Sampling Units (PSUs), i.e., villages, with probability proportional to population size (PPS); and the second stage involved the systematic selection of households within each PSU.

Indicators of women's empowerment include freedom of movement, freedom to take monetary decisions, education and working status which mainly makes her empowered to make decisions in her life. The empowerment of women was measured by some direct and indirect indices.

The direct measures included individual decision making – health care decisions, household decisions and spatial mobility of women. Indirect measures included women's education, employment status, type of earning, partner's education level as well as her mass media exposure.

Individual decisions incorporated decision on (a) spending money and (b) healthcare. Household decisions included (a) final say on large household purchases and (b) on daily household purchases. These variables were chosen on the basis of availability in both the data sources. Mean score of women's empowerment was calculated based on different dimensions of empowerment indicators. Since spatial mobility freedom is contextual and may vary across geographic regions, mean score of empowerment was calculated with individual and household decision making power of women. In individual and household decision making indicators, a score of 1 is given if a woman alone or jointly makes a decision whereas a score of 0 is given if others take the decision. Thus, the highest score can be 4 where women have the power to take all decisions or the lowest score of 0 indicating that they have no decision making in the individual and household decisions.In this study the indirect measures of women's empowerment included mean score of education (mean of education in single years), mean score of partner's education (mean of education in single years), mean of age at marriage, employment status of women (currently working or not), type of earning (without wage/in cash only/cash and kind/in kind only) and mass media exposure (yes/no).

In this study, stunting is defined as the percentage of children aged 0 to 59 months whose height for age is below minus two standard deviations (moderate and severe stunting) and minus three standard deviations (severe stunting) from the median of the WHO Child Growth Standards.Those children whose score value is below minus 2 SD are considered as stunted and chronically malnourished. Severely stunted children are those whose Z-score value falls below minus 3 SD.

Binary logistic regression was applied to see the determinants of child stunting focusing on mother's empowerment and other variables related to her. The dependent variable was stunting (below minus 2SD) among children. Children of six months and above were selected for this analysis. Three models were applied in it. The first model included the direct measures of empowerment and space variables. The second model consisted of other variables such as religion, wealth quintile, number of household members and variables specific to mother like age of mother. Birth order of the child was controlled in this model along with the variables of direct measures of empowerment and space. In the third model, along with all the other variables, indirect measures of women's empowerment were included which are education of mother and working status. The conceptual definition of terms region, sub-region and community are discussed below.

Region: Region consists of (usually) a contiguous geographical space with some homogeneity or functional dependence, usually having a specific boundary. Here the taken regions are Eastern India comprising West Bengal, Orissa, Bihar and Jharkhand. The second geographical space or region taken is Bangladesh.

Sub-region: Regions consist of sub-regions, clusters like areas that are distinctive by their uniformity of description based on a range of data. There are six sub-regions in Bangladesh, namely, Barisal, Chittagong, Dhaka, Khulna, Rajshahi and Sylhet. The four sub-regions of Eastern India are West Bengal, Orissa, Bihar and Jharkhand.

Community: Its definition divides each geographic region according to the type of residence. There are four classifications of types of residence- large city, small city, town and rural or village.

III. Results

The present situation of women in India and Bangladesh by selected indicators of empowerment and child nutrition is outlined in Table 1. It summarizes some of the characteristics of women that can influence their status and also child stunting. According to the newly released factsheets of NFHS-4 data (2015-16), 38.4 per cent children are stunted in India. This figure was as high as 48 per cent in 2005-06 as indicated in NFHS-3. Percentage of underweight children has also reduced from 42.5 per cent in NFHS-3 to 35.7 per cent in NFHS-4. The proportion of literate women according to NFHS-4 is 68.4 per cent which has increased from 55 per cent in NFHS-3. Institutional births have also increased from 38.7 per cent in NFHS-3 to 78.9 per cent in NFHS-4. An increase in percentage of women with four or more ANC was also observed in India. Women with below normal BMI have decreased from 35.5 per cent 2005-06 to 30 per cent in 2015-2016. Percentage of households with electricity has also increased from 68 per cent to 88 per cent.

Data from BDHS 2007 and BDHS 2014 showed that although Bangladesh has advanced towards decreasing malnutrition among children, but upliftment in the status of women has not been achieved to a desirable level. In the present time, the literacy rate of women in Bangladesh is almost similar to India. But the percentage of women with four or more ANC as well as institutional births is far below than that of India. In 2014 only 37 per cent of births occurred in any health facility. This percentage was as low as 17 per cent in 2007. According to BDHS 2014, around one-fifth women in Bangladesh are with low BMI as compared with 30 per cent in 2007. The percentages of stunted and underweight children are slightly lower in Bangladesh as compared with India.

Table 1: Selected indicators of empowerment of women and child nutrition in India (NFHS 2005-06 and NFHS 2015-2016 Factsheets) and Bangladesh (BDHS 2007 & 2014)

Selected indicators	India		Bangladesh	
	2015-2016	2005-2006	2014	2007
Percentage of literate women	68.4	55.1	66.3	54.5
Percentage of women with 4 or more ANC	51.2	37.0	31.2	22.0
Percentage of women below normal BMI	22.9	35.5	19.0	30.0
Percentage of institutional births	78.9	38.7	37.4	17.0
Percentage of households with electricity	88.2	67.9	73.0	47.0
Percentage of stunted children	38.4	48.0	36.0	43.0
Percentage of underweight children	35.7	42.5	33.0	41.0

Direct measures of empowerment of women

The capability of women to take decisions affecting the circumstances of their own lives is a crucial facet of their empowerment. Table 2 reveals that there was no decision for which a majority of women alone were the main decision makers in both Eastern India and Bangladesh. Less percentage of women in both countries can take decisions by themselves. Around a quarter of women in Bangladesh and Eastern India had the power of taking decision related to spending their own money. Almost 15 per cent of them in the two regions did not take a decision or were not allowed to take it on spending money.

Table 2: Direct measures of women's empowerment: Percentage distribution of women by types of decision making

Direct measures	Eastern India	Bangladesh
Individual decision		
Decision on spending money		
Alone	24.7	25.9
With someone else	60.2	58.2
Others	15.1	15.8
Healthcare decision		
Alone	24.2	12.9
With someone else	30.9	40.7
Others	43.1	46.4
Household decision		
Final say on large household purchases		
Alone	6.5	8.3
With someone else	38.6	45.1
Others	54.8	46.7
Final say on daily purchases		
Alone	25.6	29.8
With husband/partner	27.2	30.4
Others	47.2	39.8
Spatial mobility		
Permitted to go to health centre		
Alone	37.9	46.8
With someone else	58.1	30.9
Others	4.0	22.2
Final say on visits to relatives		
Alone	8.1	11.1
With someone else	45.5	52.8
Others	46.4	36.1

When healthcare decisions were considered, it was found that only 13 per cent women in Bangladesh could take them alone as compared with a quarter of them in Eastern India. Two-fifths of them in Bangladesh and one-third of them in Eastern India could take decision on own healthcare jointly with someone else. Close to half of them in both regions did not take any decision on their own healthcare and the decisions were taken by others. Out of the four decisions, women were most likely to make the decisions about purchases for daily household needs alone.; However, even this decision was taken by only a quarter of the women in Eastern India and around less than one-third of them in Bangladesh.

Women were least likely to take decisions by themselves about major household purchases. As low as only one-tenth women in both regions could take decisions alone in case of any large household purchases in the family. Their spatial mobility is another important aspect of autonomy and empowerment. More women could take decisions on their spatial mobility as compared with other decisions. More than 45 per cent of them in Bangladesh were permitted to go alone to a health centre. The value was close to 40 per cent in the case of women in Eastern India. Only 4 per cent women of Eastern India depended on others to visit health centres as compared with 22 per cent women in Bangladesh. Ghuman (2003) found that with regard to measures of women's autonomy, greater restrictions on freedom of movement were found in most Muslim areas. Bangladesh being a Muslim dominated country restricts women's spatial mobility.

Most women of Eastern India had the power to take a decision and to visit health centre alone. It was in a better place than Bangladesh. More women in India than Bangladesh could take a decision on their visits to their relatives, but most of them took decisions with someone else in both the regions. Comparison of level of empowerment in the two regions showed that in terms of most criteria, women's empowerment in Bangladesh was little higher than Eastern India. Only when a decision on own healthcare was considered, women of Eastern India scored more. This was also true for the decisions regarding visiting healthcare centres.

Table 3: Indirect measures of women's empowerment

Indirect measures	Eastern India		Bangladesh	
	Mean	%	Mean	%
Women's education	7.61		6.71	
Partner's education	8.59		7.29	
Age at marriage	16.4		15.4	
Respondent currently working		34.2		27.1
Women's employment status				
Without wage		24.4		12.9
In cash only		42.3		74.3
Cash and kind		19.6		8.90
In kind only		13.7		4.00
Mass media exposure		61.4		40.1

Indirect measures of women's empowerment

Table 3 shows the indirect measures of women's empowerment in Eastern India and Bangladesh. In Eastern India, more than 60 per cent of women were exposed to mass media as compared with only two-fifths of them in Bangladesh. The mean education level among those who entered school and their partners was better in Eastern India than in Bangladesh. Mean educational level of partners was little higher than the women's level in both the regions. Most women in both the areas were not working. Only one-third of the women in Eastern India and a little more than a quarter of them in Bangladesh were engaged in work. Mean score of age at marriage among them was also higher in Eastern India than in Bangladesh. The results reflect that the women of Eastern India were in some ways more empowered than those of Bangladesh according to the indirect measures of empowerment. This could be due to higher educational attainment, age at marriage and media exposure among the women in Eastern India than those of Bangladesh.

Mean score of women's empowerment

On the whole, in Bangladesh the mean score of women's empowerment surpassed Eastern India mainly due to better decision making power of women at the household level (Table 4). When sub-regions of Eastern India were considered, the highest mean score was reflected in Jharkhand and lowest in West Bengal. On the other hand, in Bangladesh the highest score was found in Rajshahi, while Barisal and Sylhet lagged behind. Rural communities in Bangladesh had a lower score of empowerment as compared with large cities or other communities.

Table 4: Mean scores of women's empowerment

	Eastern India	Bangladesh
Geographic region mean	1.71	2.09
Sub-region mean		
Bihar	1.69	
Orissa	1.86	
Jharkhand	1.94	
West Bengal	1.48	
Rajshahi		2.35
Khulna		2.23
Barisal		1.70
Chittagong		1.94
Dhaka		2.17
Sylhet		1.70
Community mean		
Large city	1.70	2.34
Small city	1.67	2.16
Town	1.69	2.15
Village	1.73	2.06

Scenario of Stunting in Eastern India (2005-06) and Bangladesh (2007)

Table 5 shows that prevalence of stunting among children under 5 years of age was higher in Eastern India than Bangladesh. On an average 51 per cent children were stunted in Eastern India with maximum in Bihar (56 per cent).

In Bangladesh, stunting among children was 44 per cent with a maximum of 48 per cent in Barisal. Bordering regions of both the countries had lesser stunting than other parts, i.e., West Bengal, Rajshahi, Khulna experienced less stunting than the rest of the geographical space. Almost one-third of the children in Bihar and a little more than one-fourth in Jharkhand were severely stunted. On the other hand, the highest proportion of children having severe stunting in Bangladesh was in Barisal (20.5 per cent) and Sylhet (20.7 per cent). This shows that in Eastern India, more children are severely stunted as well as chronically malnourished than the children in Bangladesh.

Empowerment and space as determinants of child stunting

The notion of maternal altruism assumes that power is in the hands of women and it will lead to better outcomes for child's health (Mason, 1986). It is believed that with a rise in women's empowerment, child health improves. A study done by Smith et al. (2003) indicates that in South Asia, an improvement in women's status has a strong influence on both the long- and short-term nutritional status of children, leading to reduction in both stunting and wasting. Our study found that with rising educational level, stunting decreased significantly in both the areas (Table 6) which means that when the women were more educated the chance of stunting decreases by 30 per cent ($p < 0.01$).

Table 5. Percentage of stunted children by region, sub-region and community

Region	Sub-region/community	Stunting (-2SD)	Severe stunting (-3SD)
Eastern India	Bihar	56.0	29.3
	Orissa	44.8	20.3
	Jharkhand	50.0	27.3
	West Bengal	45.5	17.5
Bangladesh	Rajshahi	42.1	14.5
	Khulna	36.0	10.3
	Barisal	47.9	20.5
	Chittagong	45.9	19.5
	Dhaka	44.0	15.3
	Sylhet	44.8	20.7
Eastern India	Large city	37.6	16.2
	Small city	33.0	13.2
	Town	42.0	17.5
	Village	52.9	26.1
Bangladesh	Large city	38.2	11.5
	Small city	39.8	16.1
	Town	34.1	12.6
	Village	45.6	17.5
Eastern India	Total	51.0	23.0
Bangladesh	Total	44.0	16.8

In Bangladesh with an increase in the household decisions of women, child stunting decreased markedly. Children of women who did not decide on large household purchases were more likely to be stunted ($p < 0.10$). This was also true with an increase in the decision of women on own health. The children of women who did not take decisions on own health were twice more likely to be stunted. ($p < 0.05$).

When space was considered and more specifically state or divisions was included in the analysis, it is observed that children in all the states of Eastern India were 30-40 per cent less likely to be stunted as compared with Bihar ($p < 0.01$). In the case of Bangladesh, Rajshahi and Khulna had significantly less stunting with reference to Barisal. In Eastern India the probability of being stunted was similar across communities. Children in towns or villages were likely to be more stunted than those of the cities ($p<0.01$). Also in Bangladesh, children in villages were 1.5 times more likely ($p<0.01$) to be stunted as compared with those in large cities.

Besides space and empowerment, other factors that determined stunting were religion, birth order of the child, wealth and body mass index (BMI) of the mother. In Eastern India, unlike Bangladesh, a Hindu child was significantly less stunted than a Muslim child, whereas children from 'others' (religions) were more likely to be stunted than the children from Muslim families. Stunting among children increased with birth order in Eastern India and also when the mothers were obese or thin. Children with birth order of two or three and above were more likely to be stunted as compared with children of the first birth order. Children of thin or obese mothers were also more likely to be stunted in Eastern India. But this type of association could not be found in Bangladesh. Again, in Eastern India stunting decreased by 20 per cent when the age of the mother was 20-29 years or 30 years and above with reference to mothers of 15-19 years of age. Effect of wealth on stunting was similar over space. In this case both Eastern India and Bangladesh experienced the same trend. Children were less likely to be stunted ($p<0.01$) as they were placed in the richer quintiles compared with children in the poorest wealth quintile. This was found to be true in the case of both the regions.

Table 6: Logistic regression showing determinants of stunting (-2SD)

Variables	Eastern India (Exp β)			Bangladesh (Exp β)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Education						
No Education®						
Less than 8 years of education			0.856*			0.969
8 years and above			0.698***			0.591***
Working status						
Currently not working®						
Not paid in cash			1.135			1.012
Paid in cash			1.053			1.025
Paid in cash and kind			1.184			0.791
Paid in kind			1.205			1.527
Women's empowerment						
Take decision on money®						
Do not take decision on money	0.776	0.966		0.885	1.009	
Take decision on large HH purchases®						
Do not take decision on large HH purchases	1.078	1.103		1.135*	1.142*	
Take decision on own health®						
Do not take decision on own health	1.023	0.984		1.188**	1.119	
State/Division						
Bihar®						
West Bengal	0.594***	0.583***	0.617***			
Jharkhand	0.710***	0.620***	0.631***			
Orissa	0.597***	0.608***	0.646***			
Barisal®						
Chittagong				0.956	1.103	1.075
Dhaka				0.891	1.101	0.955
Khulna				0.570***	0.675***	0.668***
Rajshahi				0.744***	0.817*	0.811*
Sylhet				0.974	1.109	1.033
Community						
Large city®						
Small city	0.982	0.879	0.931	1.122	.783*	0.847
Town	1.499***	1.161	1.221	0.846	0.654***	0.710*
Village	2.181***	0.895	0.944	1.441***	.762**	0.847
Religion						
Islam®						
Hinduism		0.872*	0.871**	0.923	0.941	0.974
Others		1.290*	1.304*	1.158	1.258	1.181
Age of mother						
15-19®						
20-29		0.819*	0.849		1.032	1.076
30+		0.780**	0.802*		1.128	1.176
Birth order						
1®						
2		1.258***	1.228***		0.953	0.884
3 and above		1.417***	1.328***		1.179*	1.019
Household members						
Upto 5 members®						
Above5 members		0.995	0.989		0.915	0.945
Wealth index						
Poorest®						
Poor		0.699***	0.748***		0.836*	0.856*
Middle		0.562***	0.635***		0.633***	0.678***
Richer		0.359***	0.443***		0.523***	0.595***
Richest		0.124***	0.170***		0.273***	0.354***

Table 6: Logistic regression showing determinants of stunting (below minus 2 SD)

Variables	Eastern India (Exp β)			Bangladesh (Exp β)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
BMI						
Normal®						
Thin or obese		1.131**	1.126**		0.981	0.984
Breast feeding						
Never breastfed®						
Ever breastfed		0.866	0.883		0.460**	0.482**
R square value	0.061	0.141	0.144	0.029	0.082	0.092
N	6837	6837	6837	5228	5228	5228

Note: Only 6 months old and above children were selected; 0 = Not stunted, 1= Stunted; ***, ** and * significant at 1%, 5% and 10% levels respectively; ® = Reference category.

IV. Discussion and conclusions

Child undernutrition or malnutrition in early years of development may also expose them to malnutrition, curtailed psycho-social skills and decreased productivity in later years. The present scenario of malnutrition in Eastern India and Bangladesh depicts that regardless of the reduction of child stunting, the rates are high enough to attract concern. High rates of prevalence of nutritional deprivation among children is a national worry requiring direct and indirect interventions to reduce child stunting specifically and malnutrition as a whole. High rates of prevalence of nutritional deprivation is a humanitarian concern requiring policy-makers and international communities to refocus their policy priorities on direct and indirect interventions to reduce children's malnutrition (Katsushi et al., 2014). This study looks into the relationship between women's empowerment and child stunting of two geographic spaces using comparable large scale representative data.

Child stunting (overall and severe) was found to be more in Eastern India than Bangladesh. Even the mean score of women's empowerment was marginally high in Bangladesh as compared with Eastern India. Though indirect measures of women's empowerment were high in Eastern India, but Bangladesh performed little better when direct measures were considered. In this study, mother's education, decision making power on money matters or large household purchases, mother's BMI, mother's age, sub-region, community, religion and wealth quintile had significant association with child stunting. Our study found that when educational level of a mother increased, there was a marked reduction in child stunting in both the regions. Caldwell (1994) argued that a mother's education has an independent, strong and positive impact on the survival of her children, that is, a higher level of immunization, less stunting and a greater knowledge of ORS. Mishra and Retherford (2000) suggested that women's education and literacy programmes could play an important role in improving children's nutritional status. In families where women play an important role in decision making, the proportion of family resources devoted to children is greater thus improving child health (Thomas 1990; Duraisamy & Malathy 1991; Bruce et al., 1995; Blumberg, 1991). In Bangladesh, it was observed that children of the women who did not take decisions on large household purposes or on own healthcare were more prone to be stunted. Improvements in women's relative decision making power had a strong influence on both long-term and short-term nutritional status, leading to reductions in both stunting and wasting (Smith et al., 2003). Osmani and Sen (2003) argued that one of the most significant factors that contribute to both the high prevalence of under nutrition and low birth weight was gender inequality and women's lack of empowerment. In the context of children's health outcomes, given that women are typically the primary care takers of children, redistribution of decision making roles in favour of women had the potential to improve children's health outcomes (de Schutter, 2013).

When sub-regions were considered, stunting was more prevalent in Bihar as compared with other states that were much less likely to witness stunting, specifically severe stunting. This could be due to the fact that Bihar lags behind in many developmental parameters which may have influenced stunting. Sethi et al., (2017) indicated that a multipronged approach is required to

address child stunting with an emphasis on pre-pregnancy and pregnancy care as well as poverty alleviation and social inclusion. They also found that only 15 of Bihar's 38 districts are on course to reach the World Health Assembly's global target of 40 per cent reduction in child stunting by 2025, with some districts likely to take over 25 years to reach the target. According to IHDR (2011) in India the top five ranks according to Human Development Index in the years of 1999-2000 and 2007-08 went to Kerala, Delhi, Himachal Pradesh, Goa and Punjab, whereas mostly the northern and eastern states of Chhattisgarh, Orissa, Bihar, Madhya Pradesh, Jharkhand, Uttar Pradesh, Rajasthan and Assam had an HDI below the national average. More specifically, Jharkhand ranked 19th, Bihar 21st, and Orissa 22nd. This shows that Bihar, Jharkhand and Orissa were far behind other states along with West Bengal which ranked 13th. This may be a reason why West Bengal experienced less stunting as compared with the other three Eastern Indian states.

In Eastern India religion played an important factor in determining child stunting unlike Bangladesh. As compared with Muslim children, Hindu children were less likely to be stunted. Unlike Bangladesh, more children in Eastern India were stunted when they were of higher birth order or when their mother did not have normal BMI. Child stunting was also more among the young mothers. In a longitudinal study of slum children in Mumbai, their poor growth was significantly associated with illiteracy, marital disharmony, younger age at marriage, and less decision-making power among mothers (Merchant & Udipi, 1997).

It is believed that mother's earning has a negative association with child stunting. Blau et al. (1996) found that women's earnings increased their ability to pay for food and breast milk substitutes. Thus, women with better earnings were more likely to have healthier children. But this correlation was not significant in our study.

So it can be concluded that mothers may have a profound influence on reducing child stunting if they are educated and empowered. Enhancing education levels may be necessary but not a sufficient condition in improving child stunting. Results implied that with the scope of further improvement of the child nutritional status, policies and programmes directly focused on pregnancy, first two years of child's life and improved child nutrition will be beneficial. Empowerment of mothers is needed along with awareness about proper nutrition to be given to child. Policy makers should refocus their policy priorities on issues concerning relative control over women's income, education and empowerment. Improved access to healthcare for a woman's own concern or for the child will also facilitate to reduce stunting.

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