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## Abstract

Background: Bangladesh has made dramatic improvements in the health of girls and women in the last 20 years. This paper examines whether gender inequalities in health are evident among older children and adolescents among extremely poor households, and identifies future health challenges for improving the health of girls and women.

Method: Gender inequalities in health were examined using data from a school health survey of school children and adolescents ($n$=900, 6.5-13.5 years). Anthropometric status; household possessions and number of siblings were measured. Undernutrition was assessed as stunting (height-for-age z-score) and thinness (BMI-for-age z-score).

Results: The prevalence of undernutrition was high (35.3% stunting; 42.4% thinness), but there were no significant differences according to gender or socio-economic indicators (via possession score). Girls had more younger siblings ($p$<0.05), while boys had more older siblings ($p$<0.05).

Conclusions: These findings accord with the national picture of successful reductions in gender inequalities in health through low cost, community-based health programmes and education policies targeting the poorest sectors. The prevalence of undernutrition, however, remains high. Reproductive behaviours may still be influenced by poverty and the gender of existing offspring. Future challenges lie in reducing the adverse health consequences to women and their infants associated with early age at marriage and childbirth.

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**Reducing health inequalities among girls and adolescent women living in poverty: the success of Bangladesh**

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**Abstract**

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**Introduction**

An estimated 40% of the population of Bangladesh lives in extreme poverty (Chowdhury et al, 2013), defined as living on less than $1.25/day (United Nations, 2015). With an estimated population of 158.5 million, the country also has one of the highest population densities worldwide (World Bank, 2014).

The traditional culture within the population is of a patriarchal social system, whereby brides move to live with the groom's family upon marriage and dowry payments are a necessary adjunct to any marriage arrangement (Choudhury, 2013). Among poor households, parents may incur long-term financial debts in order to make a dowry payment. Patrilocal residence after marriage also means that daughters move away from their natal home upon marriage and the children reside with the husband's family (Choudhury, 2013). In contrast, sons bring the benefit of a dowry payment to the household upon marriage; the acquisition of a daughter-in-law and subsequent grandchildren. These factors, in turn, bring about enhanced social status to the husband's extended family. A woman's status in her marital home, however, is often low (Cunningham et al., 2015).

Throughout the 1980s and 1990s a substantial body of evidence demonstrated associations between the social and cultural preference for sons with unequal health practices and health outcomes for boys and girls in Bangladesh. Such behaviours included feeding male household members before women and girls (Chen et al., 1981) which in turn meant that boys might receive better quality and quantity of food than girls (Kabeer et al., 1991); greater likelihood of seeking medical attention and purchasing treatments for sons than daughters (Chen et al., 1981; Hossain and Glass, 1988) and, among poor households, better growth and nutritional status of pre-school boys compared to girls (Rousham, 1996). Ultimately, these practices led to an excess mortality of girls compared to boys throughout the first five years of life in Bangladesh (D'Souza and Chen, 1980; Koenig and D'Souza, 1986; Majumder et al., 1997).

Over the last 20 years, evidence from national surveys in Bangladesh points to a sea change in the disparities in health between males and females. There have been dramatic reductions in maternal mortality, such that Bangladesh is close to meeting the Millennium Development Goal 5 (NIPORT et al., 2012), as well as notable

progress towards the reduction in mortality rates of children under 5 years old in line with the Millennium Development Goal 4 (Chowdhury et al., 2013). Most striking, however, has been the reversal of the excess mortality of girls relative to boys since the 1990s. In all populations, girls are more likely to survive the first 5 years of life than boys (Monden and Smits, 2013). This stems from an innate vulnerability of males leading to higher mortality, but is offset by the higher number of male infants conceived and born compared to females (Drevenstedt et al., 2008), such that by adulthood the ratio of males to females is approximately equal.

The expected male: female mortality ratio for under-5s has been estimated to be 117 per 1000. That is, 117 male deaths for every 100 female deaths due to expected excess mortality in males in all populations (Monden and Smits, 2013). In Bangladesh, under-5 mortality in 1993/94 was equal in males and females (149: 150 per 1000) which equates to significantly higher than expected mortality of females. By 2011, as well as a significant reduction in overall mortality, the gender imbalance had reversed and male mortality was significantly higher than females (66: 61 per 1000) in line with expected ratios (Adams et al., 2013). Figure 1 shows that child mortality (1-5 years) has also reduced from a ratio of 75 per 1000 in 1993/4 to 87 per 1000 in 2011 (Mitra et al., 1994; NIPORT et al., 2013). This has not yet reached the expected mortality ratio in 1-5 year olds of 117 male deaths to 100 female deaths per 1000 (Monden and Smits, 2013), but the excess mortality of female children has been greatly reduced.

Similarly, the gap in nutritional status of male and female children has narrowed greatly. The most recent Bangladesh Demographic and Health Survey reported that among under 5 year olds in Bangladesh stunting (height-for-age z-score <-2.0) was only slightly higher in girls than boys (42% vs 41%); wasting (weight-for-height z-score <-2.0) was slightly higher in boys than girls (16% vs 15%) and underweight (weight-for-age z-score <-2.0) was higher in girls than boys (39% vs 34%)(NIPORT et al., 2013). This demonstrates that, although undernutrition is common, the prevalence is similar in male and female children.

The rapid progress towards Millennium Development Goals and the near reversal of the mortality and nutritional status differentials of male and female children are

particularly striking because they have taken place against a background of extreme poverty.

The aim of this study was to examine the health status of female children and adolescents in Bangladesh in a particularly impoverished region of Bangladesh. The specific aims were to compare the nutritional status of school children during late childhood and early adolescence since this age group has been less well studied in low and middle income countries, and to examine the association between poverty and gender inequalities in health by comparing males and females among the poorest households compared to less poor households. A further aim was to look at the composition of siblings within households to examine whether reproductive decisions were influenced by the gender of existing children.

**Background and Methods**

As part of a baseline survey, data were collected from Meherpur district, Khulna division, south west Bangladesh, via schools within the Save the Children School Health programme. The agency conducts routine surveys of the health and anthropometric status of school age children to identify health and nutrition interventions for school health programmes. The school survey covered all 18 unions of Meherpur district, including two schools in each union (36 schools in total). A target sample of twenty-five children from each school was adopted using stratified random sampling by age and sex. Child ages were extracted from school registers. Exact dates of birth were not commonly held on file, therefore, child age was recorded to the midpoint of the nearest whole year, with the age of the sample ranging from 6.5 to 13.5 years.

Weight and height were measured using standardised techniques in the field. The height of each child was measured with the use of a portable stadiometer to a precision of 0.1 cm. Weight was measured with the use of a digital electronic scale, with the child/adolescent wearing light clothing and no shoes, to a precision of 0.1 kg. Z scores of height-for-age and BMI-for-age were calculated using the WHO growth references (De Onis et al., 2007) and the Anthropometric Standards software (Frisancho, 2008). Weight-for-age z-scores were not estimated as these can only be calculated for children less than 10 years of age (De Onis et al., 2007). Statistical analyses were carried out using IBM SPSS version 22; Inc, (Chicago, IL). Participants with z-scores exceeding the following values were excluded from the analysis: height-for-age of <-6.0 SD or >6.0 SD; and BMI-for-age of <-5.0 SD or >5.0 SD (De Onis et al., 2007). Children with a height-for-age or BMI-for-age z-score of <-2.0 were classified as stunted or thin respectively (De Onis et al., 2007). Height-for-age and BMI-for-age z-scores below -3.0 were classified as severely stunted and severely thin.

An interviewer-administered questionnaire was completed for all children including information on household structure, the number of older and younger siblings and the possession of household items. A possession index was calculated based upon responses to the questionnaire about household ownership of electricity; a motorcycle; radio or television. This followed a previously validated possession score

index (Mohsena et al., 2010) except that the present study asked about the possession of a motorcycle whereas Mohsena et al., (2010) included the possession of a bicycle. This possession score has been shown to be a better predictor of undernutrition among under 5 year old children in Bangladesh than the poverty index (Mohsena et al., 2010).  Each item was given a score of one, such that the total possession score ranged from 0-4. Possession score values of 3 and 4 were merged as only 13 individuals had a possession score of 4.

**Results**

900 children (52% female) participated in the school health survey. Of these, 47.1% had electricity in the house; 21.9% reported ownership of a radio; 26.0% owned a television and 3.3% owned a motorcycle. Table 1 summarises the ownership of household items among male and female school children. Children reported their parents' occupation; almost all mothers (95%) were reported to stay in the home. The most common occupations of fathers were as farmers (33%), daily labourers (19%) or working abroad (6.6%) with other listed occupations being skilled labourer; shop owner; rickshaw puller; office worker and teacher.

Undernutrition was a significant health problem in the school population of Meherpur, but this was the same for both males and females. Table 1 shows the mean height-for-age and BMI-for-age of male and female school children by age categories. There was a slight worsening of nutritional status with increasing age of individuals in the study ($r$= -0.1, $p$=0.003) relative to the WHO growth references. There were no significant differences in height-for-age z-scores of male and female school children in any age category. For BMI-for-age z-scores there were no significant differences in most age categories, other than females had lower BMI-for-age than males at age 7.5 years ($p$=0.04), and males had a lower BMI-for-age than females at age 12 years ($p$=0.02). However, there were no consistent differences between males and females across ages, and the overall nutritional status of males and females for all ages pooled was not significant for either height-for-age or BMI-for-age. Table 1 also shows that the prevalence of stunting was 36.8% in males and 34.6% in females (chi-square p=ns) and the prevalence of thinness was 44.3% in males and 40.6% in females (chi-square p=ns). The prevalence of severe stunting and severe thinness was also the same in males and females.

Table 2 shows a breakdown of household ownership of electricity, television, radio and motorcycle. The proportion of children who owned individual items was the same for males and females. There was no significant association with the possession of an individual household item and the height-for-age or BMI-of-age of children together, or boys and girls separately (results not shown). The possession score was therefore calculated as a cumulative measure to provide an indicator of relative socioeconomic status within the sample.

Table 2 also shows the total number of siblings, and the number of older and younger siblings for male and female children in the study. The total number of siblings was the same for boys and girls (mean 1.58 and 1.50 respectively, $t$=1.08, p=ns). However, girls had, on average, significantly more younger siblings than boys ($t$=-2.41, $p$=0.02) whereas boys had significantly more older siblings than girls ($t$=2.36, $p$=0.02) (Table 2, Figure 2).

The prevalence of undernutrition in male and female children was analysed across the four possession score groups in order to examine whether gender differences in nutritional status were apparent in the poorest households in the study. Table 3 shows no significant difference between the mean height-for-age z-scores or BMI-for-age z-score according to possession score or sex (Anova sex=ns and possession score=ns for height-for-age and BMI-for-age).

Analysis of variance was performed to assess the effects of relative poverty on the number of siblings in the household. The total number of siblings was significantly different according to possession score (F=5.91, $p$<0.001), whereby households with no possessions had significantly more siblings (mean 1.71 ± 1.23) than those in possession groups one and three (1.35 ± 1.08 and 1.34 ± 1.32 respectively, post-hoc tests $p$<0.05).

Finally, the mean number of older and younger siblings was examined according to possession score and sex to determine whether sibling composition was influenced by relative poverty and the sex of the index child. Figure 3 shows that the same pattern was observed in all possession score categories whereby gender was associated with the number of older siblings (boys had a higher mean number of older siblings than girls), but the possession score was not associated with the number of older siblings (F=2.77 $p$<0.01; main effects for sex of the index child

*p*<0.005, possession score p=ns).  Figure 4 shows that both gender and possession score were significantly associated with the mean number of younger siblings such that girls and poorer households had a significantly higher mean number of younger siblings than boys (F=3.01, *p*<0.005; sex of the index child *p*=0.005; possession score *p*<0.004 respectively).

**Discussion**

The survey of school pupils in Meherpur provides evidence of equality of nutritional status among male and female children and adolescents, even among the poorest households. However, the prevalence of undernutrition was very high; 35.3% of the children and adolescents were stunted and 42.4% were thin.

The effect of relative poverty on gender inequalities in undernutrition was examined by partitioning the sample according to the household possession score; a measure of household socio-economic status that has been previously validated as a predictor of child undernutrition in Bangladesh (Mohsena et al., 2010). The results showed no gender inequalities in health across the different possession score groups, and a similar level of nutritional status across all possession score groups. This might be expected given that the population as a whole had been identified as being disadvantaged. As such, this sample reflected a relatively low socio-economic group with 44% of households having no possessions and only 12% having three or more possessions.

While there is no evidence of gender inequalities in nutritional status in this sample, there is a suggestion of a desire to have a male child as evidenced from the pattern of older and younger siblings within a household. The fact that boys had, on average, a greater number of older siblings suggests that households continued to have children until a son was born. The fact that daughters had a greater number of younger siblings is a corollary of the above in that households had further offspring in order to conceive a son. This is a relatively small effect given that the average number of total siblings was 1.54 and ranged from 1.71 siblings in the lowest possession score group to 1.34 siblings in the highest group. The findings of the analysis of siblings suggests that wealthier households desire a smaller number of

offspring, but the decisions on the total number of offspring may be influenced over and above this by the presence of a son or daughter. Interestingly, although the poorest households had, on average, more children than the households with a higher possession score, the nutritional status of children across each of the possession scores was not significantly different in this sample.

Certain limitations of the study must be recognised in that the sample comprised children who were attending school, who may not be representative of the total population of children in the area. School attendance up to the age of 14 years is reasonably high in Bangladesh both for boys and girls. Nationally, 77% of children aged 6-10 years are estimated to be attending primary school (BIDS, BBS, UNICEF, 2013) with the highest proportion of out-of-school children being among 6 year olds. Attendance of girls in particular has been greatly increased due to the secondary school stipend (Asadullah and Chaudhury, 2009). Nationally, school attendance rates for secondary education are estimated at 80.2% for females and 72.2% for males (BIDS, BBS, UNICEF, 2013).

From a national perspective, the successful reductions in gender inequalities in nutritional status among children and adolescents in Bangladesh have been achieved through a number of community-based, low cost health interventions. For example, Bangladesh made a commitment to universal vaccination coverage with the extended programme for immunisation in 1985 and within 10 years the gender differential in immunisation rates had disappeared (Adams et al., 2013 citing BDHS 1993/4 to 2011). This success came about through a national network of community health workers, alongside outreach sites and satellite clinics with knowledge of individual households even in the most disadvantaged areas (Adams et al., 2013). Analysis of national immunisation data shows that coverage rates greatly improved in the lowest socio-economic status (SES) quintiles compared to the highest SES quintile from 49% in 1994 to 80% covered in 2005 (Adams et al., 2013).

Another key policy to have made an impact on the status of women and girls is the female education subsidy. The female secondary stipend programme (FSS) was introduced in 1994 as a conditional cash transfer scheme (Asadullah and Chaudhury, 2009) that provided a stipend to subsidise the cost of secondary school for girls and paid for tuition fees in rural areas.  To qualify for the stipend girls had to attend

school for at least 75% of the school year; obtain at least 45% in the final examinations, and remain unmarried until completion of secondary education (Adams et al., 2013; Asadullah and Chaudhury, 2009). The scheme undoubtedly contributes to the increased enrolment in secondary schools among girls, but it has been argued that steps may need to be taken to increase male enrolment in secondary school (Asadullah and Chaudhury, 2009).

**Future challenges for the health of adolescent girls and women**

Bangladesh has had very successful family planning programmes evidenced by marked declines in fertility. Total fertility rates declined from 6.3 in the early 1970s to 2.5 in 2010 (Adams et al., 2013 citing NIPORT, 2012). The practice of early marriage and childbearing for adolescent girls, however, remains a challenge for Bangladesh because of the detrimental effects on maternal and infant mortality as well as the social and economic disadvantages caused by lower educational attainment associated with early marriage (UNICEF, 2005). While the median age of marriage in Bangladesh has been raised from 14.2 years in 1996/7 to 15.8 years in 2011 (Adams et al., 1993), a large proportion of marriages still take place during adolescence. In 2001, 37.5% of females aged 15-19 years were married. By 2011, this declined to 32.5% (BDI, BBS, UNICEF, 2013). This represents a high proportion of females who are married during adolescence.

Within the country, there is considerable geographical variation in the rates of teenage marriage, with an east-west trend. Teenage marriage rates are highest in the western districts of Bangladesh and lowest in the north-east districts. In particular, Meherpur district, the area of the school health survey above, had the highest rate of teenage marriage in the country (BIDS, BBS, UNICEF, 2013). In 2011, 53.7% of marriages in Meherpur were of girls aged 15-19 years (BIDS, BBS, UNICEF, 2013).

Early marriage has social and economic influences on later life prospects. Girls are more likely to leave education as soon as they are married, and lower educational attainment leads to disadvantages in health, female autonomy and economic status. In addition, early age at first birth is associated with significant adverse health effects on both the mother and infant (UNICEF, 2005). A global study across 23 low and

middle income countries found higher risks of low birthweight and preterm birth among adolescents aged 16-19 years (adjusted OR 1.10, 95% CI 1.03-1.17; adjusted OR 1.16, 95% CI 1.09-1.23, respectively) and ≤15 years (adjusted OR 1.33, 95% CI 1.14-1.54; adjusted OR 1.56, 95% CI 1.35-1.80, respectively) compared to women aged 20-24 years (Ganchimeg et al., 2013). Furthermore, female educational attainment has been associated with gender disparities in child mortality (Monden and Smits, 2013). An analysis of Demographic and Health Survey data from south Asian countries (Bangladesh, India, Nepal and Pakistan), showed that male: female child mortality ratios (M: F) varied significantly according to the educational attainment of the mother (Monden and Smits, 2013). Among under-5 year olds, the M: F mortality rate varied from 0.88 among women with no education, to 1.10 for women with primary education, and 1.13 for women with secondary education (Monden and Smits, 2013) compared to the expected M: F mortality ratio of 1.17. The extent of the bias was even greater among 1-5 year olds such that the M: F mortality of children born to women with no education was 0.58, representing a significant excess of female deaths (Monden and Smits, 2013).

The factors leading to early age at marriage and first birth are important areas for further research. Currently, there is weak legal governance surrounding the minimum age at marriage, dowry payments and the rights of children and these may hinder progress in making improvements in women and child health (Adams et al., 2013).


**Female autonomy and empowerment**

Women's empowerment has been flagged as an integral component of international development programmes, particularly in order to reduce gender inequities (Gates, 2014). Women's empowerment in the household has been associated with child nutritional status across South Asia in general terms, but the nature of the relationship is variable (Cunningham et al., 2015).

Bangladesh has been at the forefront of development programmes that target the extreme poor and also target women (Das and Horton, 2013). This is considered to be one of the key drivers of the success in reducing health inequalities. One such development initiative targeting women has been the microcredit schemes. Such

schemes are targeted at poor families giving them access to small collateral-free loans, usually initiated and held by the female head of household, and thereby encourage female empowerment (Adams et al., 2013). Various health benefits have been suggested to have resulted from microcredit schemes such as improvements in child mortality and women's health status through the indirect processes of social and economic empowerment (Adams et al., 2013). In 2010, the number of women members of microfinance institutions reached an estimated 33 million (Adams et al., 2013). However, there are many different elements to female empowerment, including social support, educational attainment, decision-making within the household as well as financial autonomy. More research is therefore needed on the sub-domains of empowerment and which components are the greatest determinants of child health outcomes (Cunningham et al., 2015).

Although the proportion of women in employment in Bangladesh has been low historically, there have been considerable increases in the number of women in the workforce, particularly in urban areas. The female labour force has increased from 8% of women in 1983/84 to 33% in 2010 (Adams et al., 2013).  Some of the largest employers of women are in the garment industry and construction work where conditions of work are typically very poor (Adams et al., 2013). While greater employment and participation in the workforce confers greater female autonomy and power, women still experience discrimination, violence and unequal pay in the workforce (Choudhury, 2013). It is estimated that 87% of women who are working are employed in the informal sector (Bangladesh Bureau of Statistics, 2011), and these are frequently low status, low pay jobs sought by the poorest women. The construction industry is an area where participation of women in informal employment has increased, and these women are exposed, in particular, to hazardous work environments as well as harassment and negative social perceptions of their roles (Choudhury, 2013). Early betrothal and age at marriage also impact upon female autonomy because marriage arrangements often lead to a withdrawal from school or further study, as well as relocating to the home of the groom. The early period of being a daughter-in-law is typically associated with low autonomy and a high level of dependence on other members of the household members (Cunningham et al., 2015).

**Conclusion**

This paper has examined gender differences in nutritional status and the number of siblings in the family according to relative poverty in Meherpur; a district of Bangladesh with high levels of disadvantage and with one of the highest rates of teenage marriage in the country (BIDS, BBS, UNICEF, 2013). The findings show that boys and girls in late childhood and early adolescence experienced the same prevalence of stunting and thinness, with no apparent gender bias in nutritional status across any of the socio-economic groups. There is some evidence that reproductive behaviours in families are influenced by the presence or absence of a son; this leads to small but statistically significant differences in the mean number of older and younger siblings, but is not associated with significant differences in the nutritional status of boys and girls.

The study in Meherpur district is in line with national data demonstrating significant improvements in the health of girls and women. Bangladesh has made remarkable progress towards the millennium goals 4 and 5, as well as achieving gender parity in immunisation rates nationally and closing the gap in male: female child mortality ratios. Bangladesh has made some of the greatest progress compared to other countries in the region. Among the South Asian Association for Regional Cooperation (SAARC) countries, Bangladesh has the highest annual rate of reduction of the under 5 mortality rate for the size of population (BIDS, BBS, UNICEF, 2013). A key to the success of health improvements and reductions in health inequalities is the strong community based health programme; the use of community health workers to deliver low cost interventions, and the early and rapid adoption of health innovations (Choudhury et al., 2013). These improvements have taken place against a continuing backdrop of poverty. However, there are still health challenges for women and girls in Bangladesh, with the need to identify the determinants of early marriage and childbearing, improve employment and working conditions of women and identify the important components of female autonomy in order to improve the health of future generations.

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**Legends to Figures**

Figure 1: Bangladesh national child (1-5 year) mortality rates per 1000 for males and females in 1993 and 2011 (Mitra et al., 1994; NIPORT et al., 2013).

Figure 2: Mean number of older and younger siblings according to the sex of the index child (n=900) (*t-test, $p<0.05$ between males and females).

Figure 3: Number of older siblings by possession score (0-3) and sex of the index child (ANOVA main effects: sex of index child $p<0.005$, possession score p=ns; Post-hoc tests possession score 0 vs 1 $p<0.05$; 0 vs 3 $p<0.05$).

Figure 4: Mean number of younger siblings by possession score (0-3) and sex of the index child (ANOVA main effects: sex of index child $p<0.005$; possession score p=0.005; Post-hoc tests possession score 0 vs 1 $p<0.05$; 0 vs 3 $p<0.05$).

Figure 1



Child (1-5 year) mortality rate
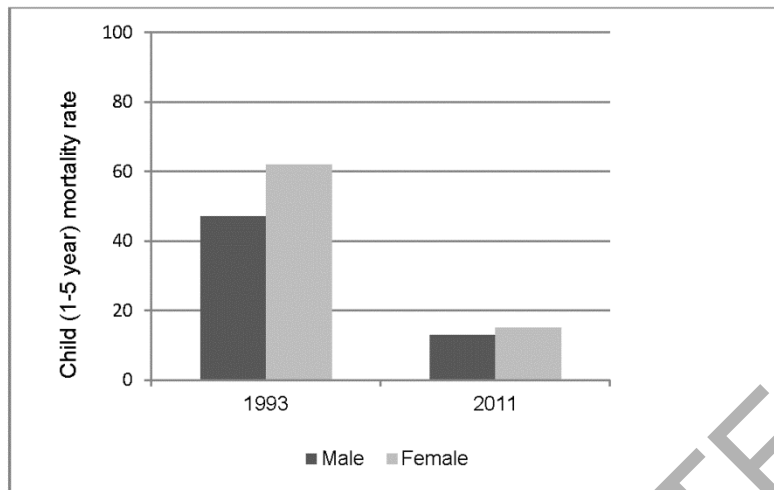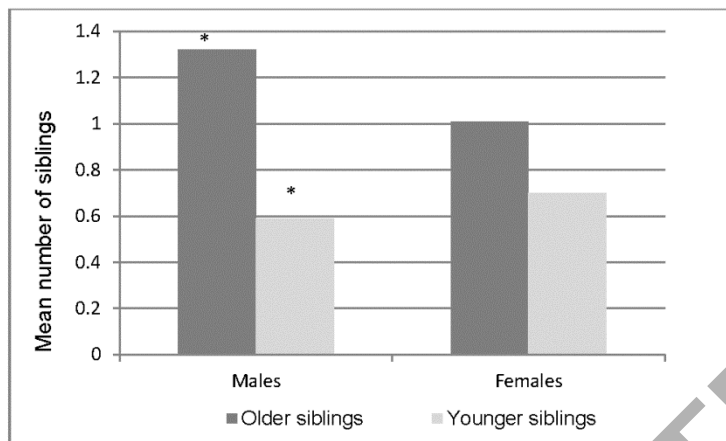
1993    2011

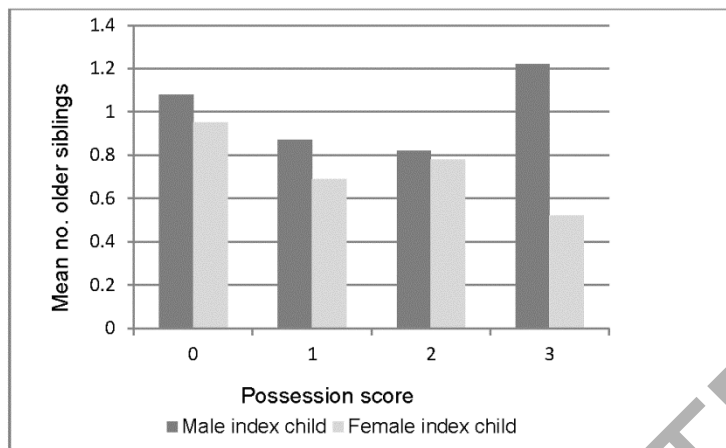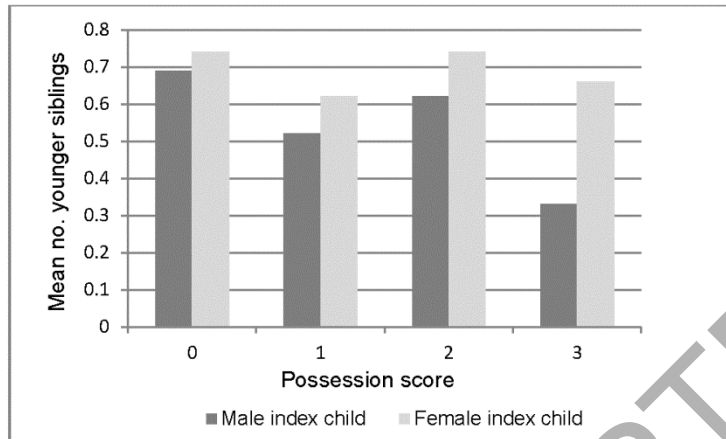■ Male    ■ Female

Figure 2

Figure 3

Figure 4

Table 1: Anthropometric status (height-for-age and BMI-for-age z-scores) of the Meherpur school children sample by age and gender (n=900)

| | Height-for-age z-score | | | | | BMI for age z-score | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | Male mean (SD) | n | Female mean (SD) | n | p | Male mean (SD) | n | Female mean (SD) | n | p |
| 6.5 | -1.56 (0.97) | 44 | -1.42 (1.23) | 41 | ns | -1.51 1.25 | 44 | -1.70 (0.89) | 39 | ns |
| 7.5 | -1.46 (1.51) | 51 | -1.19 (1.36) | 45 | ns | -1.53 (1.25) | 48 | -2.01 (0.90) | 43 | 0.04 |
| 8.5 | -1.66 (0.95) | 55 | -1.66 (1.37) | 67 | ns | -1.80 (1.37) | 56 | -1.68 (1.31) | 67 | ns |
| 9.5 | -1.67 (0.89) | 71 | -1.58 (0.91) | 91 | ns | -1.85 (1.06) | 70 | -1.79 (1.23) | 88 | ns |
| 10.5 | -1.63 (1.07) | 90 | -1.59 (1.17) | 99 | ns | -1.93 (0.96) | 89 | -1.87 (1.02) | 98 | ns |
| 11.5 | -1.44 (1.10) | 59 | -1.74 (0.92) | 68 | ns | -1.91 (1.47) | 59 | -1.86 (1.02) | 64 | ns |
| 12.5 | -2.05 (1.31) | 42 | -1.46 (1.27) | 35 | ns | -2.09 (1.38) | 40 | -1.40 (1.19) | 36 | 0.02 |
| 13.5 | -2.17 (0.72) | 6 | -1.82 (0.92) | 13 | ns | -1.84 (1.31) | 6 | -1.15 (0.89) | 13 | ns |
| All ages | -1.64 (1.15) | 421 | -1.57 (1.14) | 462 | ns | -1.82 (1.23) | 415 | -1.77 (1.11) | ns | 451 |
| Prevalence (%) of stunting /thinness (<-2.0 z-scores) | 36.8 | 153 | 34.6 | 157 | ns | 44.3 | 184 | 40.6 | 181 | ns |
| Prevalence (%) of severe stunting/thinness (<-3.0 z-scores) | 10.9 | 46 | 8.0 | 37 | ns | 13.7 | 57 | 10.9 | 49 | ns |

Table 2: Ownership of possessions and numbers of siblings in the Meherpur school children survey of children and adolescents aged 6-13 years old (n=900)

| | | Male | Female | Total | p |
|---|---|---|---|---|---|
| Ownership of possessions | Electricity % (n) | 47.2 (204) | 47.0 (220) | 47.1 (424) | ns |
| | TV % (n) | 23.1 (100) | 28.6(134) | 26.0 (234) | ns |
| | Radio % (n) | 22.2 (96) | 21.6 (101) | 21.9 (197) | ns |
| | Motorcycle % (n) | 2.3 (10) | 4.3 (20) | 3.3 (30) | ns |
| Sibling number | Total siblings mean ± SD | 1.58 ± 0.36 | 1.50 ± 0.33 | 1.54 ± 1.21 | ns |
| | Older siblings mean ± SD | 0.99 ± 1.32 | 0.80 ± 1.02 | 0.89 ± 1.17 | 0.02 |
| | Younger siblings mean ± SD | 0.59 ± 0.65 | 0.70 ± 0.71 | 0.65 ± 0.68 | 0.02 |

Table 3: Anthropometric status (height-for-age z-score and BMI-for-age z-score) of male and female school children according to possession score index (scored from 0-3)

| | | Possession Score | | | | |
| | | 0 | 1 | 2 | 3 | p* |
|---|---|---|---|---|---|---|
| Height-for-age z-score mean (n) | Male | -1.61 (180) | -1.72 (123) | -1.47 (70) | -1.76 (44) | ns |
| | Female | -1.64 (209) | -1.55 (104) | -1.51 (85) | -1.37 (61) | |
| BMI-for-age z-score mean (n) | Male | -1.85 (178) | -1.85 (123) | -1.84 (68) | -1.53 (42) | ns |
| | Female | -1.76 (206) | -1.60 (100) | -1.81 (83) | -1.98 (59) | |

*Anova p=ns for possession score and sex. Possession score is based on the number of items owned from electricity, TV, radio and motorcycle.