Title: Inequality of childhood undernutrition in Bangladesh: A decomposition approach

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Summary

Background: Undernutrition is one of the major public health concerns in Bangladesh. This study examined the trends and patterns of childhood undernutrition, inequality and its socio-economic contributors in Bangladesh.

Methods: Data were extracted from the last four rounds of the Bangladesh Demographic Health Survey (BDHS). A regression-based decomposition method was applied to assess the socio-economic contributors of inequality.

Results: Although the prevalence of childhood undernutrition has declined during the period 2004 to 2014, the rate of undernutrition is higher among the children of mothers who had lower education, live in rural areas and are from the poorest wealth quintile. Socioeconomic status accounted for almost half of the total inequality in the prevalence of both stunting and underweight among children, whereas maternal education was ranked second among the contributors.

Conclusions: Findings of the study indicate that undernutrition inequalities in terms of socioeconomic aspects appear to have widened over time. Improving economic activity and maternal education will improve the nutritional status of children and as a consequence reduce inequality. Therefore, investments in education, creation of working opportunities, empowerment of vulnerable and disadvantaged people along with nutrition-specific interventions will be important measures to eliminate this inequality at the population level.

KEYWORDS: Children, inequality, nutrition, Bangladesh

1| INTRODUCTION

Childhood undernutrition is an emerging public health concern globally. Undernutrition (e.g., wasting, stunting and underweight) is a form of malnutrition which is responsible for approximately 45% of all global childhood deaths, which mostly occur in low and middle-income countries.[1,2] Malnutrition has both short and long-term effects that are detrimental to the physical and intellectual growth of children and also accounts for nearly 35% of the disease burden among under-five children and 11% of total global Disability Adjusted Life Years (DALYs).[3] However, socioeconomic inequity due to undernutrition has become a critical concern as such inequity is present throughout the developing world.[4] Several studies have documented that children from richer families and living in urban areas are better-off in terms of nutritional indicators than their poorer and rural counterparts.[5–8] In addition, urban-rural disparities continue to exist in education, economic status, employment opportunity, and other socio-cultural dimensions that have a significant impact on child health.[9,10] Adequate nutritional intake in the early stages of children's lives is essential for proper development of organs and their optimal performance. Proper development in turn is crucial for a well-nourished population so that individuals are capable of learning new skills and contributing to society.[3] Undernutrition often disrupts children's mental and intellectual development, and is directly associated with morbidities and mortalities.[11] It is estimated that, globally, 52 million under-five children are wasted and 155 million are stunted while approximately 15% of under-five children are underweight.[1,12] To tackle this situation, the international community has set the Sustainable Development Goal (SDG-2.2) to end all forms of malnutrition by 2030 and made commitments to reduce childhood malnutrition by 20 million and to avoid at least 1.7 million childhood deaths.[13,14]

As in many other developing countries, childhood undernutrition is a prevalent public health concern in Bangladesh. Reducing the burden of undernutrition among children is now one of the major concerns of the government and many international agencies in Bangladesh.[15] As a consequence, in Bangladesh (as in developing countries) there has been heavy promotion of interventions such as exclusive breastfeeding, micronutrient supplementation, and many community based nutritional programs.[16] According to the recent national health survey, the prevalence of stunting (low height for age) had reduced from 51 percent in 2004 to 36 percent in 2014 while the prevalence of underweight (low weight for age) had reduced from 43 percent in 2004 to 33 percent in 2014.[17] Although Bangladesh has made rapid progress over the last decade in meeting most of the Millennium Development Goals, malnutrition remains a crucial public health challenge.[18] A substantial literature has identified various factors such as child's age, birth order, birth size, parents' education, media exposure, mother's BMI, height, nutritional knowledge and frequency of feeding, place of delivery, number of under-5 children, age of household head, household economic status and regional differentials which are associated with child malnutrition.[5,19–22] Although the SDGs emphasize the reduction of health inequality for all, a comprehensive equity analysis of childhood undernutrition has

received less attention in Bangladesh, and where such analysis has been conducted, only a part of undernutrition such as stunting was examined.[23,24] Socioeconomic inequities in childhood undernutrition are increasingly attracting the attention of researchers and policymakers, thus fostering a substantial growth in the literature on health equality.[25] Nevertheless, it is crucial to identify the extent of inequality of undernutrition (stunting, wasting and underweight) across socio-economic strata and sort out the factors that make the greatest contribution towards the observed inequalities. Thus, policymakers can understand the underlying causes of inequality and adopt the appropriate interventions targeting the vulnerable groups of utmost need. The degree of socio-economic inequality in undernutrition can be measured using the concentration indices and can be decomposed into the relative contribution of factors, which can provide insights on pathways, through which undernutrition inequalities have arisen. In this present study, we have utilized the last four rounds (2004, 2007, 2011, and 2014) of the Bangladesh Demographic and Health Survey (BDHS) data to observe the trends of childhood undernutrition inequality and sort out the factors that are potentially contributing to socioeconomic inequalities in Bangladesh. Therefore, we have decomposed a set of potential factors into their relative contributions in the light of the published literature. This study will help the policymakers to design and prioritize the various community based nutritional interventions to address childhood undernutrition in Bangladesh and elsewhere with similar socio-economic conditions.

2| MATERIALS AND METHODS

2.1 | Study design and sampling procedure

Data were extracted from Bangladesh Demographic and Health Survey (BDHS) which is a nationally representative cross-sectional survey. We used the last four rounds of BDHS (2004, 2007, 2011 and 2014) for measuring child undernutrition equity and conducting decomposition analysis. The BDHS surveys were conducted by the National Institute of Population Research and Training under the Ministry of Health and Family Welfare in Bangladesh and implemented by "Mitra and Associates", a Bangladeshi research organization.[17] Multistage cluster sampling technique was used in the survey to obtain a nationally representative sample of households. The objective of this survey is to provide reliable data on maternal and child health indices, to evaluate the impact of social indicators on maternal and child health and develop a suitable strategy for their improvement.[17] According to the BDHS methodology, informed consent was obtained from each participant prior to the interview. The detailed methods and sampling frame have been described elsewhere.[17]

2.2 | Outcome variables

Childhood undernutrition was assessed by three well-established anthropometric measurements developed by the World Health Organization (WHO),[26] namely height-for-age z-score (HAZ), weight-for-age z-score (WAZ) and weight-for-height z-score (WHZ). Data on child heights, weights and age were collected from

the survey and z-scores (HAZ, WAZ and WHZ) were calculated following the WHO child growth standard guideline.[27] A child was defined as stunted if height-for-age z-score was below minus two (-2) standard deviation (SD) from the mean of the reference population. Similarly weight-for-age z-score of below -2 SD and weight-for-height (WHZ) z-scores of below -2 SD were considered as underweight and wasting respectively.[17]

2.3 | Major explanatory variables

Various studies have identified different socio-economic and maternal factors that are strongly associated with different forms of undernutrition (i.e., stunting, wasting and underweight).[5–8,28,29] Based on the published literature, a number of explanatory variables, such as age and sex of the children, maternal age, education, access to electronic media, residence and socioeconomic status were included in the decomposition analysis. Maternal education was categorized as no education, primary level of education, and secondary and higher secondary level of education. Morbidity was defined as "Yes" if child had experienced any episode of diarrheal or acute respiratory infections in the two weeks preceding the survey and "No" if not. Similarly, access to electronic media was defined as "Yes" if household had access to radio/television and "No" otherwise. Information related to household income or expenditure was not collected in BDHS. Therefore, in the absence of income or expenditure data, a household asset-based wealth index was used as a proxy to assess households' economic status. This proxy measure is a widely used approach and especially recommended for the low- and middle-income countries.[30] The wealth index, generated based on the principal component analysis (PCA), was divided into five quintiles: poorest, poorer, middle, richer and richest. Durable household assets (such as radio, television, mobile phone, refrigerator, almirah, water pump and computer) and household characteristics (such as drinking water sources, toilet types, cooking fuel types, floor, wall and roof materials) that are related to wealth were used to generate the household wealth index.

2.4 | Measurement and analysis

Inequality analysis in stunting, wasting and underweight was executed at three stages; plotting the concentration curves, examining the concentration indices (CIs) and decomposing of the concentration index. Concentration curves were portrayed for stunting, wasting and underweight, and concentration indices explained the inequity regarding concentration curves. Finally, the socio-economic decomposition analysis was performed to explore the factors that contributed to the inequity in undernutrition.

2.5 | Concentration curve

The concentration curve provides the pattern and magnitude of discriminations showing the distribution of diseases among the socio-economic groups. We constructed the concentration curves which plot the cumulative share of childhood undernutrition (stunting, wasting and underweight) against the cumulative

percentage of the population ranked from the poorest to the richest.[31] The cumulative proportion of health outcomes (stunting, wasting and underweight) in the vertical axis depicted against the cumulative proportion of the samples regarding socio-economic status. If the undernutrition is more concentrated among poor people, the concentration curve will lie above the equity line. However, if the health outcome (undernutrition) is concentrated more among the wealthy then the concentration curve will lie below the equity line. However, when the concentration curve coincides with the equity line, malnutrition will be equally distributed among the socio-economic strata. If the concentration curve equals the 45° straight line exactly, this means that there is perfect equity in childhood malnutrition with respect to the wealth index.

2.6 | Concentration index

The concentration index (CI) summarizes the information contained in each concentration curves, and is twice the area between concentration curves and equity line.[32] CIs were calculated to measure the gap between the concentration curves and the equity line. The negative CI indicates that the curve lies above the 45° line and undernutrition is more concentrated among the lower socio-economic strata. In contrast, if the curves lie below the equity line, malnutrition would be more concentrated among people in the upper socio-economic strata and the value of concentration indices would be positive. Moreover, a value of 0 (zero) signifies perfect equality, i.e., there is no socio-economic related inequity for child undernutrition. A convenient simple computational formula[32,33] for the concentration index can be written as:

$$CI = \frac{2}{\mu} \text{cov}\,(h, r) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where CI is the concentration index, h is the childhood undernutrition and r is the fractional rank of the individual in the distribution of wealth index, μ is the mean of the child malnutrition variables and cov is the covariance. The value of the CI lies between -1 to +1 (i.e. $-1 \leq CI \leq +1$), where -1 refers to the case where malnutrition is fully concentrated among the poorest quintile and +1 refers to the case where malnutrition is fully concentrated among the richest quintile.

2.7 | Decomposition of socio-economic inequalities

Finally, the estimated CIs were decomposed to realize the contribution of individual socio-economic characteristics in childhood undernutrition.[32,34,35] The regression model for the health outcome (y) to the set of k determinants (x_k) can be expressed as follows:

$$y = \alpha + \sum_k \beta_k x_k + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

Here, β_k is the coefficient of x_k and ε is the error term. The concentration index of y denoted (C) can be written as follows:

$$C = \sum_k (\beta_k \overline{x_k}/\mu) C_k + GC_\epsilon/\mu \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

Here, μ is the mean of health outcome variable (y); $\overline{x_k}$ is the mean of x_k (k^{th} determinant variable); the concentration index of x_k is denoted by C_k and GC_ϵ is the generalized concentration for the error term(ε). $\frac{\beta_k \overline{x_k}}{\mu}$ denotes the elasticity of the undernutrition with respect to the explanatory variables. In other words, this quantity indicates the amount of change in dependent variables (i.e. height-for-age, weight-for-age and weight-for-height) related to the one-unit change in the explanatory variables. Decomposition analyses were done for all of the three measurements of undernutrition in the year 2004, 2007, 2011 and 2014. Multivariable analyses were conducted, and results were presented in terms of the estimated elasticity, concentration index, absolute contributions (in the same unit as the concentration index) and adjusted percentage contributions (i.e., relative contributions).

2.8 | Percentage changes in undernutrition

Percentage changes of prevalence of stunted, wasted, and underweight from 2004 to 2014 were calculated using the below formula;

$$\text{Percentage change} = \frac{\text{(Prevalence at the base year-Prevalence at the current year)}}{\text{Prevalence at the base year}} \times 100$$

The base year for this calculation is 2004 and current year is 2014. Therefore, the annual percentage change of the prevalence of undernutrition was calculated based on the following formula:

$$\text{Annual percentage change} = \left(\left(\frac{\text{Prevalence at the current year}}{\text{Prevalence at the base year}}\right)^{\frac{1}{\text{No. of years}}} - 1\right) * 100$$

All the statistical analyses were computed using Stata SE-13 (Stata Corp LP, College station, United States of America). Analysis were adjusted according to the BDHS recommended sampling weights.

2.9 | Ethical Approval

The BDHS dataset is publicly available; however, approval was given upon request by the Measure Demographic and Health Survey (DHS) program office to use this data set. As per DHS, written informed consent was obtained from all participants enrolled in their survey.

3 | RESULTS

3.1 | Background characteristics

The socio-demographic, maternal, and household characteristics of the study participants are presented in Table 1. The nutritional data of a total of 24,981 under-five children were analyzed in this study. The median age of the children was 29 (IQR=29), 30 (IQR=28), 32 (IQR=30), and 31 (IQR=30) months in the year 2004, 2007, 2011, and 2014 respectively. The proportions of male and female children were almost equally

distributed in each survey round. A decreasing trend of childhood morbidity (*diarrhea/ARI*) was observed from the year 2004 to 2014 (21.87% vs. 10.41% from 2004 to 2014). Most of the mothers were aged 20 to 34 years and their educational attainment (secondary and higher level) increased over the period (31.32% vs. 54.79% from 2004 to 2014). Almost all of the households had the opportunity to access safe drinking water from improved sources (e.g., tube well and deep well), and about 67% of household had improved toilet facilities. Although several people lived in rural areas, the percentage of urban habitats was found to increase with each succeeding survey year (Table1).

(Table 1 will be inserted here)

3.2 | Trends in childhood undernutrition

The prevalence of undernutrition (e.g., stunting, wasting and underweight) over the four survey periods have been illustrated in Figure 1. We observed that the prevalence of childhood undernutrition has declined from 2004 to 2014 in Bangladesh. The prevalence of stunting and wasting has declined from 51% (2004) to 36% (2014), and 15% (2004) to 14% (2014) respectively. Similarly, the decreasing trends of childhood underweight were also observed from 2004 (42%) to 2014 (33%). We also found that the prevalence of undernutrition is higher among the children of mothers who had lower education, lived in rural areas and were from the poorest wealth quintile (Table 2).

(Figure 1 will be inserted here)

The overall change in stunting prevalence over the ten year periods (2004 to 2014) was about 28%, while the prevalence of stunting declined at a rate of 3.2% per annum (Table-2). The percentage of annual decline was comparatively higher for the children ages <12 months (4.0%). The percentage of annual decline was 3.3% and 3.1% among the male and female children respectively (Table-2). Educated mothers contributed more (2.7%) to the deterioration of stunting. The rate of annual decline of stunting prevalence was higher among the urban children (3.5%) than rural (3%). Regarding the wealth quintiles, the percentage of annual decline of stunting was high in richest wealth quintiles (4.6%) than poorest (2.1%).

(Table 2 will be inserted here)

The overall percentage change in the prevalence of wasting was 1.5% from 2004 to 2014 with a 0.2% annual decline rate (Table-2). The percentage of annual change of decline was the highest among the children aged 12 to 23 months (2.4%), who lived in urban areas (1.1%), and belonged to middle wealth quintiles (2.2%). Indeed, the rate of decline of childhood wasting was lower than the rates of decline of both childhood stunting and underweight. The annual decline in the prevalence of childhood underweight was 2.6% from 2004 to 2014 and the overall change was about 23%. The annual decline rate was higher

among the younger children aged <12 months (4.1%), male children (2.8%), urban children (3.4%) and children from richest wealth quintiles (3.9%).

3.3 | Trends in socio-economic inequalities in childhood undernutrition

Socio-economic inequity for stunting, wasting and underweight in terms of concentration index (CI) with the overall percentage change of CIs are presented in Table-3. We found that children from poor households were more concentrated with respect to childhood undernutrition. The concentration indices showed that overall inequities in terms of stunting and underweight increased at the national level while a little improvement was observed in the prevalence of wasting (Table-3). Figure 2a, 2b, 2c Concentration curves represents inequity in stunting (Figure 2a), wasting (Figure 2b), and underweight (Figure 2c) from survey year 2004 to 2014. We found that the concentration curves for all the three indicators of undernutrition lie above the equity line. Further, the gap between the yearly concentration curves and the equity line was found to increase gradually from 2004 to 2014 for all the three indicators of childhood undernutrition.

(Table-3 will be inserted here)

(Figure 2a, 2b and 2c will be inserted here)

3.4 | Decomposition of inequality in childhood malnutrition

Table 4a, 4b and 4c present results from the decomposition analysis of childhood undernutrition inequalities which indicate the effects and contributions of various socio-economic and demographic factors of respondents. The tables present results of elasticity analysis, the concentration index of the regressors (CI), absolute and the percentage contribution of regressors to the inequality of undernutrition.

We found that children aged more than 48 months, higher birth order (>3 births), presence of morbidity, comparatively adult mother (35 & above years), and children from poorer households and low maternal literacy were more concentrated among the less afluent population. On the other hand, 2-3 birth order, mothers of 20-34 years age group, children from mothers who had access to electronic media and had secondary and higher education were concentrated among the better off. Among the variables, the greatest contributions to childhood inequality in terms of stunting were wealth index (52%), maternal education (39%) and accees of electronic media (33%) in 2014.

(Table 4a will be inserted here)

Regarding inequality of childhood wasting, we observed that age, sex of the children, childhood morbidity status, maternal education and wealth status of households were important contributors. Among the variables, the greatest contributions towards inequality in wasting were economic status of households and maternal education. Household wealth status was responsible for 61% of the inequality in 2004 and 58% of the inequality in 2014; whereas, mothers' education explained 23% of the socio-economic related

inequality of wasting. Access to electronic media also made a significant contribution to wasting inequality explaining 17% of the total inequality in 2014.

(Table 4b will be inserted here)

Like stunting and wasting, age of the children, the presence of morbidity, maternal age and education, electronic media access, and wealth status were also associated with the inequality of childhood underweight (Table-4c). We found that children aged above 48 month, morbidity status, adult mother and children from uneducated mothers and from lowest wealth quintile were concentrated among the less affluent population in both 2004 and 2014. Household economic status as measured by wealth index was responsible for 53% of the inequality in 2004 and 58% of the inequality in 2014. Access to electronic media also had a significant contribution to the underweight inequality that increased from 20% in 2004 to 22% in 2014.

(Table 4c will be inserted here)

4 | DISCUSSION

In line with recent Sustainable Development Goals, Bangladesh is committed to ending all forms of childhood malnutrition by 2030.[36] Although undernutrition prevalence has declined considerably over the last 2 decades, inequality in childhood undernutrition still remains a big concern in Bangladesh.[37] Our study lays the groundwork to uncover the causes and the changes in childhood undernutrition inequality over the period using nation-wide survey data and decomposes the contribution of each determinant. This study observed that household wealth accounted for the single largest component of socio-economic related undernutrition inequalities. The other key contributors are maternal age and education, birth order and opportunity access to mass media.

Our study observed that the prevalence of childhood stunting, wasting and underweight has declined by 27.9%, 1.5% and 22.8% respectively from year 2004 to 2014. The overall change in stunting and wasting over the decade were highest among the richest, urban residents and among male children which indicated the persistence of socioeconomic disparities in childhood undernutrition in Bangladesh. This is consistent with previous studies which also reported that nutritional improvements were often observed among urban resident children and children who belonged to richer households.[38,39] One of the obvious justifications is that wealthiest households spend more money on healthy food and choose better places to live, e.g. localities with better health care facilities.[23] Apart from the improved healthcare system in urban areas, better housing arrangements, improved water and sanitation facility, and transportation facilities are more prevalent in urban areas. These factors are linked with higher healthcare utilization and better health outcomes.[40–43] Furthermore, higher socioeconomic status ensures better living conditions which may contribute to better

child-care and improved feeding practices which lead to a decline in the prevalence of different forms of malnutrition.[8]

According to the concentration curve and index analyses, improvements in nutritional indicators (stunting, wasting and underweight) were found to be more concentrated among the rich communities. However, nutrition is a basic human right for all irrespective of socio-economic status. The negative concentration index suggests that the poor people are the sufferer of ill-health in Bangladesh. This indicates that over the years, decline in the prevalence of malnutrition has been more pronounced among the richest economic groups rather than the poor. Children from the poorest households were more exposed to undernutrition and the odds of undernutrition declined consistently as the wealth index increased.[40–43] Such a scenario is very common in the South Asian regions.[13] Our findings are supported by previous studies that have shown the reduction of malnutrition was not guaranteed to improve equity in Bangladesh.[44] The underlying reasons behind this slow progress among poor communities might be their poor living standards, detrimental environmental conditions, low affordability of purchasing of sufficient quality foods and lower utilization of health care services.[38,39] Furthermore, these conditions might lead to insufficient physical growth, poor nutritional status and exposure to infectious diseases. These in turn may trigger the increased risk of malnutrition among children belonging to lower socioeconomic groups.[45]

The key finding of the study was that socioeconomic status was accounted for almost half of the total inequality in both stunting and underweight prevalence of children whereas, maternal education was ranked as the second contributor. These results are consistent with the previous studies reporting that lower socio-economic groups and children from uneducated mothers were prone to childhood undernutrition.[38,46] Recently, Bangladesh has achieved remarkable economic growth and improved various health indicators. However, affluent households were benefited more from the economic growth compared to poor households.[47] Indeed, children from disadvantaged socio-economic households bear the greatest burden of childhood morbidity which is directly linked with childhood undernutrition.[48] Therefore, policy should prioritize the mitigation of the unequal wealth distribution by focusing on effective financial mechanisms, voucher scheme, social safety net programs, and creating income opportunities which might contribute to reducing income related inequalities so as to reduce childhood undernutrition in all strata of society.

Inequalities in childhood undernutrition indicators with respect to maternal education is also similar to that of the wealth index of households. We find striking improvement in undernutrition status among the children of educated mothers. Our findings are in line with previous studies which have also found that mothers' educational and physical stature were crucial contributing factors for childhood nutritional inequity.[24] Improved nutritional status among the children of the most educated mothers might reflect the health advantages conferred by their higher educational attainment.[49] It was documented that educated mothers could ensure minimum acceptable diets (MAD) for their children as they are well informed about

the deleterious effect of childhood malnutrition on child development.[50] Previous studies in this context observed that providing MAD is essential for tackling childhood undernutrition and the wealthiest households had better opportunity to access and could afford minimum acceptable diets than the poorest.[51,52] Therefore, along with the improvement in household income, more and more intensive community based educational programs are required to reduce inequalities in education, particularly for rural women. Indeed, interventions promoting behavior change could be an effective strategy for tackling inequality in childhood undernutrition by targeting poorer households and uneducated mothers.[53] Similarly, mass-media exposure is an important source of knowledge for avoiding childhood undernutrition and has an important role to inform mothers better about adverse child health outcomes.[48,54] Therefore, the in-depth attention of policy makers is needed to increase the accessibility of mass medias and to design and roll out nutrition education programs to increase nutritional knowledge and awareness among unprivileged mothers in the community. The latest Bangladesh National Nutrition Policy emphasizes improving health equity for the poor and geographically marginalized populations through identifying its various underlying causes. Thus, our study can contribute to identifying the actions should be taken to prevent inequalities in childhood undernutrition.

The study had several limitations. First, the measurement of wealth status was based on household assets due to the absence of data on household income and expenditures. Therefore, use of such a wealth index rather than income quintiles is a limitation of this study. Second, the data utilized in this study were extracted from a cross-sectional survey that means we are not able to provide evidence of a causal relationship. Again, due to the unavailability of data on various potential confounders (such as childcare practices, food taboos, management of illness and others) that might affect childhood undernutrition inequality cannot be included in the analysis to examine their contributions. The term undernutrition we used was defined by the WHO standard flag limits which may are to some extent arbitrary and different judgement may result in higher or lower than the reported prevalence. Furthermore, there may also be recall bias and incorrect reporting particularly on variables such as age at birth and educational status and this may case doubt on our results. Despite these limitations, data used in the present study were extracted from the nationally representative demographic and health survey with a large randomized sample, and thus, our findings can be representative of the entire country.

5 | CONCLUSION

This study has sketched the trends and inequalities in nutritional status among children. The main conclusion could be summarized by observing that, while the overall malnutrition situation is improving, inequalities in terms of socioeconomic aspects appear to have widened over time. These study findings should be considered in the context of current and proposed policy decision making. Investing in economic status and maternal education can improve the health status of children and simultaneously reduce inequity. Nutrition-specific interventions such as micronutrient supplementation, improved food and nutrient intake

during pregnancy for low-income households might also be prioritized. Further, investment in education, creation of greater working opportunities, and empowerment of vulnerable and disadvantage peopled will be important measures to eliminate inequality at the population level.

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