Global Food Security 12 (2017) xxx–xxx

Contents lists available at ScienceDirect

Global Food Security

journal homepage: www.elsevier.com/locate/gfs

Bangladesh's story of change in nutrition: Strong improvements in basic and underlying determinants with an unfinished agenda for direct community level support

Nicholas Nisbett[a], Peter Davis[b], Sivan Yosef[c], Nazneen Akhtar[d]

[a] Institute of Development Studies (IDS) at the University of Sussex, UK
[b] Independent Consultant, UK
[c] International Food Policy Research Institute (IFPRI), USA
[d] Independent Consultant, Bangladesh

ARTICLE INFO

Keywords:
Nutrition
Undernutrition
Malnutrition
Bangladesh
Underlying
Policy

ABSTRACT

Bangladesh has made considerable progress in reducing child stunting and is lauded as a success story in global nutrition fora. This mixed-methods study considers available statistical and qualitative evidence to help reveal the critical factors behind Bangladesh's 'story of change' in nutrition. Much of the improvement in nutrition in Bangladesh in recent years is explained by what can be seen as nutrition-sensitive drivers within a wider enabling environment of pro-poor economic growth. Key amongst these factors have been improving incomes; smaller family sizes and greater gaps between births; parental - and particularly women's - education and wider health access. Research and interviews with key stakeholders and work at a community level has helped shed light on the policy and programmatic choices which lie behind these wider determinants. Community based nutrition programmes have not yet been operating at scale as in other countries and the current governance arrangements for nutrition delivery are weak. But as Bangladesh faces growing new nutritional problems and still suffers from a relatively high burden of child stunting, such 'nutrition-specific' programmes will have to play a greater role than in the past, as the further gains from some of these wider drivers may be limited and are likely to have plateaued.

1. Introduction

Bangladesh has become celebrated as a country that has made considerable progress in nutrition in recent years. For example, the proportion of children under 5 years of age moderately or severely stunted has declined from 55% in 1997, to 41% in 2011, and 36% in 2014 (NIPORT,1997, 2013, 2015). This has been reported as one of the most sustained reductions in child undernutrition in the world (Headey et al., 2015).

This study forms one of six country case-studies of Stories of Change in Nutrition which also include Nepal, Zambia, Ethiopia, Senegal and the Indian state of Odisha (formerly Orissa). As with other cases in this series, it sets out to document Bangladesh's story, drawing from the existing literature and data on nutrition in Bangladesh, from analysis of data from previous studies, and from new interviews conducted for this study.

The paper attempts both to document lessons from this story of considerable recent improvements in nutrition and look forward to the challenges in further improving the nutrition of the population – particularly for those left behind in various states of malnourishment, as well as those facing emerging problems. Along with the other cases in this special issue it also forms one of a growing library of studies looking to fill an acknowledged gap in the literature (Gillespie et al., 2013) documenting experiences at a country level. It is hoped that the lessons drawn here from multiple sources of data here will be useful in facing future challenges in improving nutrition both in Bangladesh and in other countries.

2. Methods

A mixture of primary and secondary sources were gathered to consider changes in the 15–20 year period that was the focus of this and the accompanying case studies (selected to coincide with available data and suitable recall of policy actors of this period). Primary research consisted of 11 stakeholder interviews carried out in-person in Dhaka (10) and via skype (1) in 2015 and a re-analysis of 293 life

E-mail address: n.nisbett@ids.ac.uk (N. Nisbett).

http://dx.doi.org/10.1016/j.gfs.2017.01.005
Received 3 October 2016; Received in revised form 6 January 2017; Accepted 22 January 2017

Table 1
Sampling for stakeholder interviews.

Respondent type	Stakeholders
Government	2
(I)NGO	5
Donor/International organisations	3
Academic	1
Total	**11**

history interviews, carried out in 2007, which reflected community-level changes in the country (these were extended semi-structured interviews with both men and women asking them to describe major recalled changes over their lifetimes, with particular reference to changes in their poverty and wellbeing and which included discussion of health, food and nutrition). Secondary research included an analysis of recent literature on policy and programming and a review of primary indicators of nutritional outcomes and likely underlying and basic drivers of these outcomes. A relatively smaller sample of stakeholders was made possible given the authors were able to draw on recent primary research conducted amongst nutrition stakeholders in Bangladesh (Saha et al., 2015). Stakeholders were selected purposively based on a mapping of nutrition relevant stakeholders and relatively levels of influence, the earlier research and known gaps in the existing literature on Bangladesh's policy environment. The selection (Table 1) was designed to include those: a) able to talk in depth of the changes in nutrition and its underlying determinants over the past 10–15 years, and b) able to shed light on gaps in the existing stories, particularly with regard to some of nutrition's underlying drivers in health and women's empowerment highlighted in the data.

For the stakeholder interviews, a semi-structured script was designed both to elicit unprepared stakeholder responses to the question of how they might tell the story of change in nutrition to an educated lay outsider and then to discuss the reasons for this. Prompts for reasons were firstly undirected and subsequently structured around specific factors that had been highlighted in a literature review of potential policy and programmatic drivers of nutritional change in Bangladesh. Both the stakeholder interviews and life history interviews were analysed using a version of thematic analysis in the program Nvivo. Thematic codes were assigned to passages of interview transcripts according to both *a priori* and emergent themes. These multiple sources of data were also compared with recent analysis of five rounds of Bangladesh' Demographic and Health Survey (DHS), from 2007 to 2011, which has identified the key correlates of stunting reduction and which is used as an important source of triangulation throughout the analysis presented here (Headey et al., 2015).

3. Trends in nutrition 1997–2014

3.1. Overall trends

Declines in undernutrition prevalence in Bangladesh referred to above (Fig. 1) have been matched by improvements in some other indicators linked to nutrition's immediate determinants in both dietary intake and health status. Mortality rates for children under five years of age have also continued to decline, from 221 deaths per 1000 live births in 1970, to 46 in 2014. Breastfeeding rates in the country are high, with nearly all infants aged 12 months or younger being breastfed and for long durations, and 87.3% of children aged 20–23 months still receive breast milk (NIPORT et al., 2015).

However, high levels of both stunting and underweight still prevail. Fig. 1 also reveals how wasting has been a particularly stubborn indicator with both rises and falls since 1996/7. While overall breastfeeding rates are high, exclusive breastfeeding rates fell from 64% of infants aged less than 6 months in 2011 to 55.3% in 2014, and only 22.8% of children aged 6–23 months are fed in line with optimal infant and young child feeding (IYCF) practices (ibid.). Indicators of micronutrient status are also still poor in many areas (ibid, ICDDR, B et al., 2013). Vaccination rates have markedly improved over the long term but in recent years they seem to have plateaued (NIPORT et al., 2015).

Being overweight is also an emerging but significant problem in Bangladesh. In 2009, 9.5% of children aged 6–15 years were overweight, and 3.5% were obese (Bulbul and Hoque, 2014). In 2013, 23% of women were overweight or obese (BMI at or above 25 kg/m^2), an increase of 6% points from 2011 (HKI and JPGSPH, 2014).

The national picture is also complicated when considering data disaggregated by geography and income. Fig. 2 displays changes between 2011 and 2014 in the country's eight administrative Divisions and demonstrates the much greater progress in Khulna, Dhaka and Rangpur Divisions but poorer progress in Sylhet (where stunting has actually increased). Further geographic disaggregation reveals pockets of high stunting which are located in remote, marginal and chronically-poor areas such as the *Chars*, *Haors* and The Chittagong Hill Tracts. Stunting prevalence is higher in rural areas (39% in 2014) than in urban areas, but urban rates are still high (31%), reflecting continuing poor conditions for the urban poor (Pathey, 2014). Across the population, in 2014, children in the poorest quintile were 2.5 times more likely to be stunted (50%) than their peers in the wealthiest quintile (21%) (NIPORT et al., 2015). Inequity in nutritional outcomes has become greater over time, with the ratio of poorest to richest rates increasing from 1.6 to 1.9 between 1996 and 2013 (HKI and JPGSPH, 2014).

4. Understanding the process of change – data and stakeholder views

Multivariate analysis of successive DHS data sets (1997–2011) has helped pinpoint some of the correlates of the declines in stunting in Bangladesh (Headey et al., 2015). Significant factors include (Fig. 3) a rise in household assets; improvements in parental education (with a significantly greater effect of maternal education); a reduction in open defecation; prenatal and birth delivery care; family reproductive factors (birth order and birth intervals); and maternal height. However, the model was only able to explain around 53% of stunting in this period, leading the authors to speculate on factors identified outside of the data available to the model, including agricultural production and NGO-led programmes (Headey et al., 2015).

In the following section, existing data on immediate, underlying and basic factors are considered alongside stakeholder and community views with regard to changes potentially related to the stunting changes. This helps provide some weight to some of the factors identified in the multivariate analysis and, given that model's inability to explain around 47% of stunting changes, highlights some compelling areas for further analysis.

4.1. Underlying drivers

4.1.1. Food security and dietary diversity

Several of the stakeholder interviewees spoke at length about the progress in Bangladesh's food security since independence from Pakistan when asked to describe the most significant drivers of nutritional change. The famine that followed the war of independence and the ongoing concerns about food security of the newly independent state were seen as drivers for developing rice production and several stakeholders commented on the successes here, including the cultivation of new varieties and new seasonal crops. But some also noted the imbalances this had created in terms of agricultural – and therefore dietary – diversity, and noted the need to move away from a primarily carbohydrate-based diet. Some interviewees also felt that the recent rises in education and household income had led to families now