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

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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

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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

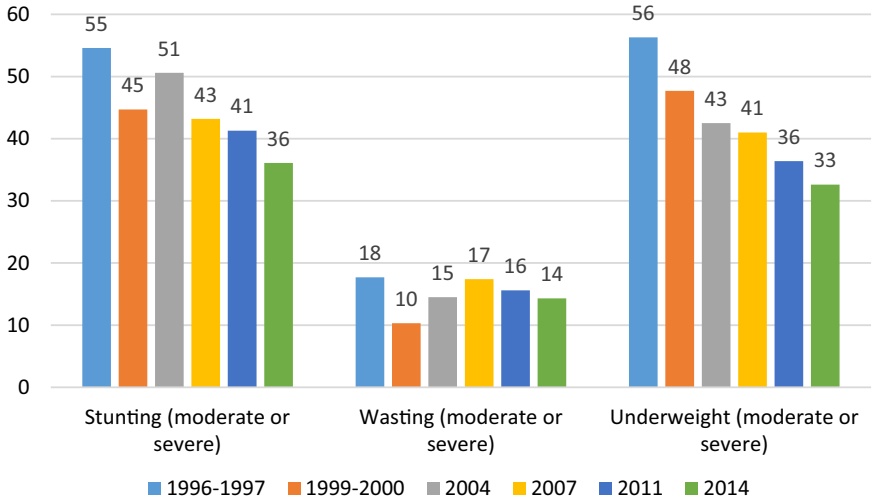

Fig. 1. Trends in nutritional status of children under 5 years of age in Bangladesh, 1997–2014. Note: 1996–1997 data from NIPORT et al. (1997); 1999–2000 data from NIPORT et al. (2001); 2004, 2007, 2011, and 2014 data from NIPORT et al. (2015).

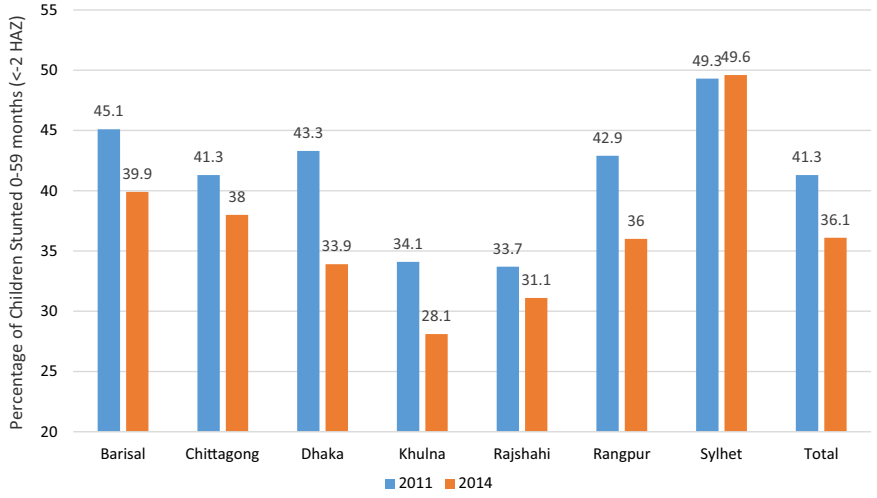

Fig. 2. Recent progress in stunting in Bangladesh's Divisions, 2011–2014. Source: Authors, using Data from NIPORT et al. (2015, 2013).

purchasing a wider variety of food, reinforced by wider nutritional education, which had gradually resulted in greater dietary diversity and improved nutrition. In keeping with these positive stakeholder views, several of the community life histories noted that hunger did not reach the extent and intensity experienced in the 1970s and 1980s, and for most people, with the exception of the declining number of extremely poor, hunger was no longer a problem.

These views are mostly well reflected in aggregate measures of food insecurity, which show significant improvements since independence and from recent highs in the mid-1990s, when an estimated 37% of the population was undernourished,[1] to a recently estimated rate of 16.4% of the population in 2015. However, supporting the community views of the lags to the extreme poor, Fig. 4 also reveals how declines had plateaued by the mid 2000s.

There was no measured improvement of dietary diversity between 2005 and 2013, even though there was an increase in per capita consumption expenditure over the same time period (HKI and JPGSPH, 2014). In 2013, 59% of women were consuming inadequately diverse diets (of fewer than five food groups) (ibid.). As described by stakeholders, a significant proportion of nutritional needs are still being met by rice rather than via a more diverse diet of non-staples. Analysis has linked this to a research and policy bias which favours rice production, combined with broader drivers of food prices over this period (Naher et al., 2014).

4.1.2. Child and maternal health

A number of different aspects of health and health interventions were discussed by stakeholders as being significant drivers of nutritional change over this period, which is consistent with significant health factors identified in the multivariate analysis. Improvements in maternal health and reproductive health were seen as particularly important and were linked to wider advances in women's empowerment, discussed below. But wider health interventions were also seen as important (given their immediate links to child health/immunity status an immediate driver of nutritional status). References here included the success of childhood vaccination program and the use of ORS and zinc in the treatment of diarrhoea at scale.

Both these programmes were also seen as examples of successful NGO driven innovations, co-ordinated with government, which had relied on the use of a cadre of community health workers tasked with registering and treating cases or beneficiaries directly in the community. Others noted how these community health workers had been key to earlier health successes such as the EPI or ORS programmes. A few

[1] According to the FAO's undernourishment indicator, which estimates the number of people who would fall below a minimum calorie requirements based on a calculation of food available for human consumption in terms of a balance of production, trade, wastage and other uses.

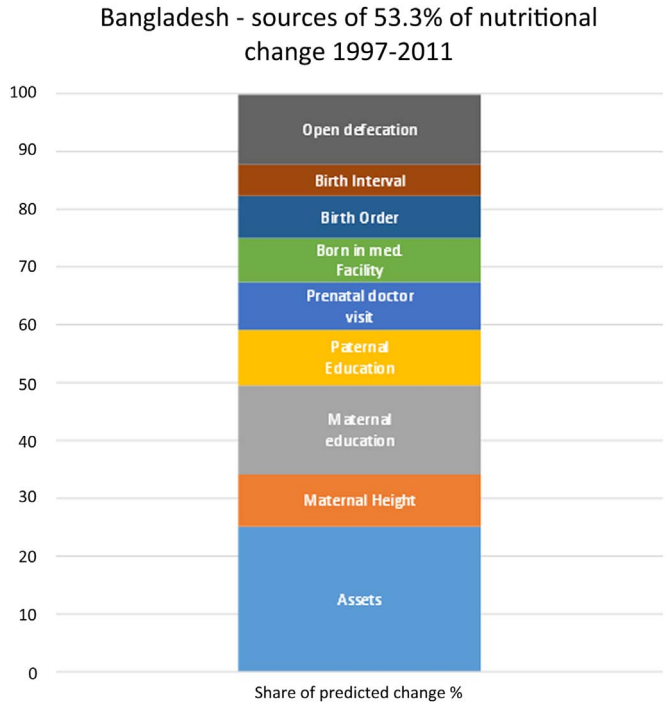

Fig. 3. Decomposition analysis of DHS variables associated with stunting reductions, 1997–2011. Source: Headey et al. (2015).

of the interviewees noted that although ante-natal care had improved, there were serious shortcomings in post-natal care. One interviewee noted the need for more support to paramedics and doctors. Others still noted the need for more support to the frontline – particularly to Community Skilled Birth Attendants and Traditional Birth Attendants still responsible for a significant proportion of births at home.

Both these successes and challenges are reflected in the available data (including that on child mortality and immunization reported above) – and the literature, where Bangladesh's health successes against a backdrop of a weak health system are deemed a paradox (Chowdhury et al., 2013). Antenatal coverage for births increased from 58% in 2004 to 79% in 2014, and 64% of women in 2014 benefited from services by a trained antenatal care provider (NIPORT et al., 2015). Birth attendance by a skilled provider nearly tripled over a decade, from 15.6% in 2004 to 42.1% in 2014 (NIPORT et al., 2015). However, in 2013, more than two in five Bangladeshi women experienced an increased risk of difficulties during childbirth and delivering a baby of low birth weight related to their own short stature (HKI and JPGSPH, 2014), and Bangladesh has one of the highest low-birth-weight rates in the world, at 20–22% (UNICEF, 2015).

4.1.3. Water and sanitation

The role of improved water and sanitation access and practices was also seen as being particularly relevant by around half of all interviewees. One interviewee referred to how the improvements in water access had been driven by support from the Government, donors, and NGOs such as Wateraid. Most references to WASH by interviewees, however, were with regard to improvements in sanitation practices, particularly the construction of latrines and the eradication of open defecation. One interviewee highlighted in particular the role of Community-led Total Sanitation (CLTS) in accomplishing this eradication and the role of Kamal Kar (the founder of CLTS) in particular. Interviewees also talked about contribution of foreign remittance in transforming tin and thatched houses to *pucca* building (i.e. 'proper' buildings constructed with sturdier materials such as concrete, brick, cement, or stone) with attached bathrooms.

Turning to the available data, we see these views substantiated in the significant progress the country has made in providing access to improved drinking water sources and improved sanitation. The percentage of the population with improved access to water sources increased from 68% to 87% from 1990 to 2015 – enough to meet the related Millennium Development Goal of halving the number of people without access to safe drinking water. Action in rural communities appears to have been particularly significant, with the practice of open defecation falling dramatically from 40% to two percent of the population over this time (Fig. 5) (UNICEF and WHO, 2015), in part due to a government effort in the early-mid 2000s that included giving local councils responsibility for achieving 100% household latrine coverage, utilizing community-led total sanitation and other approaches facilitated by nongovernmental organisations, and provisioning a significant percentage of development funds to sanitation (Hanchett, 2016). Reduction in open defecation is also significantly associated with the decline in stunting in the multivariate analysis (Headey et al., 2015).

Unusually for South Asia, the gains have been broad based, with progress amongst the poorest in rural communities occurring much faster than in any other country and largely driving the reduction in open defecation (Fig. 5). Even though open defecation is now negligible, access to improved sanitation facilities is still low, at 61% (Figure 8) (UNICEF and WHO, 2015). There are now large variations in access to improved sanitation and in particular between wealth quintiles in the growing urban population (ibid.:20).

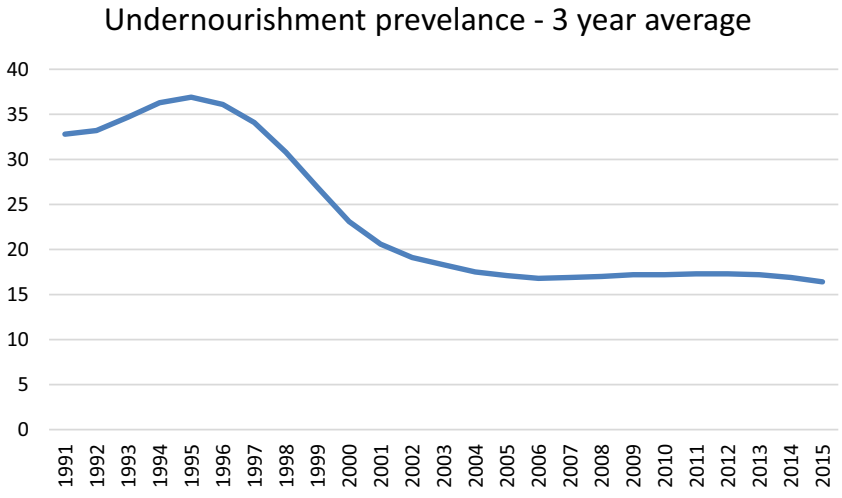

Fig. 4. Undernourishment prevalence in Bangladesh (percent of population) –3 year average. Source: FAOSTAT (2015).

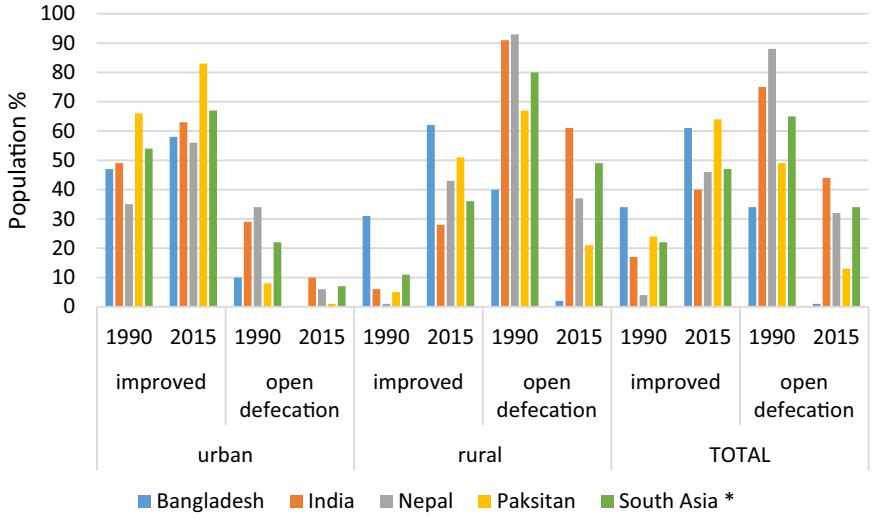

Fig. 5. Sanitation indicators across selected South Asian countries 1990–2015. Source: UNICEF and World Health Organization (2015).

4.2. Basic drivers

4.2.1. Income, poverty and inequality

Economic growth, reductions in poverty and increases in household income more generally were noted by several stakeholders as being a strong driver of change and this is consistent with the Headey et al. (2015) identification of improvements in household wealth as having one of the most powerful associations with the decline in stunting (Fig. 3). Wider improvements in Bangladesh's infrastructure, including roads and rural electrification were also cited as basic drivers associated with improved nutritional status. Rural electrification, for example, was seen to have enabled the lighting of external latrines at night, whilst roads were seen as giving better access to health facilities. Urbanisation was also seen as a key driver of such changes and wider improvements in income, health access and education, but was also seen as a key remaining challenge given the growing health issues in poorer rapidly-expanding urban areas.

Wider data support this picture of the overall improvements in people's lives in recent decades. The proportion of the population living below the national poverty line has halved since the 1970s (Bangladesh Ministry of Finance, 2014). Real Gross Domestic Product (GDP) grew at an estimated rate of over 6% between 2005/06 and 2013/2014 (World Bank, 2016). Between 2000 and 2010, head count poverty rates declined by nearly 18% points (Bangladesh Bureau of Statistics, 2011; World Bank, 2013).

Economic status or wealth were important drivers observed at the community level. Extreme poverty, in particular, was commonly accompanied by reduced food intake, malnutrition and high morbidity. In times of household crises, extremely poor people often reported experiences of cutting back on meals – sometimes eating two meals per day instead of three, and reducing food expenditure. Expensive items such as meat, fish, milk, fruit and vegetables were cut back in favour of rice (cheap varieties), some lentils, and freely or cheaply available vegetables – such as *kochu (Colocasia esculenta)* – and small fish (Jahan et al., 2010; Hossain et al., 2005). Often food consumption for women and girls suffered disproportionately. With more money available, however, in most cases acute food shortages in the life histories were observed to have declined – even in the traditional *monga* (famine prone) areas in the northwest of Bangladesh, and even in pre-harvest seasons when food is usually more scarce than at other times.

Household and business assets were important in households because they provided security, improved quality of life, were often productive and could be readily sold if needed (Davis, 2011). Livestock were preferred assets for investment, and also directly improved nutrition via increasing the availability of animal products, such as meat, dairy and eggs. Within study communities, investments associated with improving household wealth were also usually accompanied by investments in education for children, better use of qualified health providers when needed, better water and sanitation, electrification, and a better quality diet.

Increased availability of non-farm and manufacturing work has also been part of the story of economic development in Bangladesh in recent years – highlighted strongly in both stakeholder and community level interviews. This has been particularly important for women working in manufacturing–especially in the ready-made garments sector, but also men and women benefitting from opportunities for work overseas. In addition to economic activity, it is likely that Bangladesh's wide range of social protection policies have played a role in providing an income and food security floor for the poorest families – particularly as around 60% of current expenditure is on food based programmes[2] (Ahmed et al., 2016). Social protection expenditure is on the increase and may have a role in ameliorating poverty amongst recipient groups – total expenditure in 2014 amounted to US $2.7 Billion, accounting for about 12% of its budget and 2.3% of GDP on around 100 programmes (compared to 4.3% of the budget for health[3]) and Budget allocations in 2015/16 were increased to US $3.4 billion (Ahmed et al., 2016).

Income inequality, however, continues to grow: the Gini co-efficient of income, a measure of inequality, was 0.393 in 2000, 0.467 in 2005, and 0.458 in 2010 (Bangladesh Ministry of Finance, 2014). Rural and urban disparities also remain striking, with extreme poverty in rural areas remaining a big challenge (Bangladesh Ministry of Finance, 2014).

4.2.2. Gender and women's empowerment

Both community- and stakeholder-level interviews highlighted how employment opportunities for young women are helping to delay the age of marriage and first pregnancies by empowering and valorising the contribution of girls. Education of women was also seen to have been a driver of both changing gender relations within the home and greater mobility of women via access to jobs. The majority of stakeholders

[2] Whilst this is only broadly 'nutrition-sensitive', we note that more recent large scale social protection schemes, primarily donor funded but some in direct partnership with government ministries have included specific nutrition measures and that this trend appears to be on the rise within Bangladesh – although given the diversity of programmes it cannot yet be said that 'nutrition-sensitive' social protection programmes are currently operating at scale in Bangladesh.

[3] Reported at http://bdnews24.com/bangladesh/2015/06/25/proposed-budget-allocation-for-health-lowest-in-fy-2015-16 last accessed 04 January 2017.

interviewed felt that education had enabled women to pursue healthier dietary choices for household consumption, to be more receptive to public health messaging, particularly around reproductive health and facility based birth, hygiene, delayed marriage, and, to a lesser extent (in terms of its mentions by interviewees) behavioural change for infant and young child feeding practices. The initial drivers of this increase in women's educational access/attainment was related by some stakeholders to school feeding programmes from the 1970s onwards and to girls' education stipends from the 1990s onwards (see Baulch, 2011; Huq, Rahman, 2008; Raynor and Wesson, 2006). Parents also mentioned making use of the school stipend, which they reported using for school-related expenses, such as stationery and food.

In the stakeholder interviews, government immunization programmes and the introduction of the community clinics were also thought to have contributed to the mobility of women by encouraging movement out of the house when accessing such health services. One interviewee stated that, "even though there has not been significant economic improvement, women's mobility improved. When mobility improves definitely she is going to the [health] facility." In addition, specific programmes of awareness raising around women's rights and empowerment issues run by both Bangladeshi and international organisations were thought to have contributed to positive change in women's status.

This gradual empowerment of women was also seen to have been supported by wider changes – including access to microcredit and to a lesser extent, social protection. The opportunities afforded to women in particular to work in the garment sector were also highlighted by nearly all interviewees. "[A] [g]irl who earns is self-conscious about her decision making". Interviewees felt this had given them a voice, position and authority within the family. One interviewee reported, "women have a much bigger say now. Women were seen as not worth any cash. When she started bringing in money then, she was valued by the mother-in-law and the husband as well." Bangladesh's significantly falling fertility rate, both a driver and a result of all the changes to women's status considered together, was mentioned by nearly all interviewees as having one of the most significant effects on nutritional status. Similarly, in our field interviews there was widespread understanding among interviewees of the importance of having small, healthy families, reflecting the national trend in declining family size. Interaction with family planning, visiting primary health professionals, and NGO staff have likely contributed to these attitudinal changes (El Arifeen et al., 2013).

Wider data show Bangladesh performing relatively highly on indicators of women's empowerment in the last couple of decades (Table 2). Bangladesh is one of the only countries in the region recorded as having enacted legislation on equal pay for equal jobs (UNIFEM, 2015). However, strong social, cultural and economic inequalities remain, particularly in specific regions such as Sylhet. Female literacy rates are still lower than for males. Yet female life expectancy, time in school and primary and secondary enrolment rates are now higher for females compared to those of males. The labour force participation rate of women aged 15 and over has fallen between 1990 and 2013 from 61.6% to 57.4% (though men experienced a similar decline and this may be due to remaining in education for longer) (UNIFEM, 2015).

5. Immediate drivers – nutrition specific policy and programming

5.1. Nutrition specific policies and drivers

Table 3 presents a timeline of key nutrition policies in Bangladesh, which reveals a relatively comprehensive set of policies. The wider story of nutrition policy in Bangladesh over the past two decades, however, is marked by pockets of successes and long-term setbacks. A review of the policy literature in this area reveals how policy attention to nutrition-related activities and programmes spiked in the 1970s and 1990s, though these efforts have often been characterized as isolated and vertical. Newer initiatives have focused on mainstreaming nutrition across sectors and a wide range of stakeholders.

Earlier programmes included the Bangladesh Integrated Nutrition Program (BINP) (1995–2002)- which focused on behaviour change communication, supplementation, and de-worming on a large scale using the country's strong network of nongovernmental organisations and the National Nutrition Program (NNP), implemented via a cadre of a volunteer community nutrition promoters working out of community nutrition centres. Both programmes were beset by a lack of impact on the ground – with the NNP replacing the BINP and the NNP superseded in 2011 (under pressure from donors such as the World Bank – Taylor, 2012) by the National Nutrition Service (Saha et al., 2015). The latter planned the 'mainstreaming' of nutrition activities under the NNP into the roles of mainstream health workers under the National Nutrition Service (NNS). The planned activities contained within the NNS Operational Plan (2011–2016) are listed in (Table 4).

Current state of implementation.

Several interviewees spoke specifically about the government nutrition specific programmes of this period (BINP, NNP and NNS) – though only two registered these as having been drivers of change in this time. Some interviewees felt that the NNS is too young as a program but that there was some momentum now. Others' concerns included the perceived lack of leadership in the IPHN (the lead institution for the NNS), or they repeated criticisms regarding the lack of impact or scale of these programmes. Some, however, did comment on the existence of high level political support for nutrition (evidenced in speeches and international commitments) which they felt would lead to better implementation on the ground within time.

A number of current and future challenges in delivering nutrition interventions at adequate coverage to meet existing gaps have been covered in an interim report on NNS implementation commissioned by the World Bank (Saha et al., 2015). The report identified a number of delays in overall roll-out and training which might be addressed in time, but also identified some more fundamental issues in terms of the

Table 2
Selected female education indicators.
Source: UNICEF SOWC 2015 The last reported figures for the indicator 'Adult literacy rate: females as a percent of males" fall outside of the indicated period for India. Full data are available in the UNICEF SOWC 2015 report.

	Life expectancy: females as a percent of males	Adult literacy rate: females as a percent of males	Enrolment ratios:females as a percent of males		Survival rate to the last grade of primary: females as a percent of males
			Primary GER	Secondary GER	
	2013	2009–2013	2009–2013*		2009–2013*
Bangladesh	102	88	106	114	114
India	105	68	102	94	–
Pakistan	103	63	87	74	101

Table 3
Timeline of key nutrition policies in Bangladesh.
Source: Compilation by authors, following review of policy documents.

Overarching	• National Plan of Action on Nutrition (1997) • National Food and Nutrition Policy (1997) • Bangladesh Pure Food Act (2005) • National Food Policy (2006) • National Food Policy Plan of Action for 2008–2015 (2006) • National Health Policy (2011) • Health Population and Nutrition Sector Development Program (2011)...National Nutrition Services is formed • National Food Safety and Quality Policy (2012 draft)...led to set up of Bangladesh Food Safety Authority as part of 2013 Food Safety Act • National Nutrition Policy (2015)
Children	• National Strategy on Infant and Young Child Feeding (2007) • National Communication Framework and Plan of Action on Infant and Young Child Feeding (2010)
Micronutrient deficiencies	• Prevention of Iodine Deficiency Diseases Act (1989) • National Strategy for Anemia Prevention and Control in Bangladesh (2007) • National Guidelines for the Management of Severely Malnourished Children (2008)
Maternal care	• Maternity Protection Law (2011) • International Code of Marketing of Breast-milk Substitutes provisions (2012 draft)...will replace 1990 Breast-Milk Substitutes Act

Table 4
Planned nutrition activities listed in the NNS Operational Plan.
Source: Government of Bangladesh National Nutrition Services (2011).

- Growth monitoring and promotion (GMP)
- Maternal nutrition and IYCF services
- Behaviour change communication (BCC)
- Vitamin A supplementation of children 6–59 months
- Iron-Folic Acid (IFA) supplementation of pregnant and lactating women and adolescent girls
- Prevention and control of anemia in children under–5
- Deworming of children (1 – 5 years) and adolescent girls
- Other micronutrient supplementation of public health importance (Zinc, Calcium, etc)
- Management of severe and moderate acute malnutrition (facility and community based)
- Promotion of use of iodized salt
- Nutrition during emergencies
- Training and capacity building
- M & E and nutrition surveillance
- Mainstreaming gender

overall design of the NNS, its execution and governance. To address the governance issues will require better internal government co-ordination around nutrition and a stronger position of the NNS within the implementing ministry (a position stakeholders mentioned is currently under discussion). However, regardless of whether this is achieved, a number of issues identified with the design suggest that adequate coverage of interventions at a community level is unlikely to be achieved during the period of the current operational plan. In particular, the report identified uncertainties around the overall package designed to be delivered via NNS (it was thought too ambitious with too many activities expected to be delivered) and the diversity of delivery platforms assumed available to deliver this package (none of which are under direct control of the IPHN as the nodal government institution). This has particular significance for understanding whether any activities will reach the community level outside of facility based access. Whilst the report did not rigorously examine frontline delivery of nutrition services (expected to become part of the role of existing frontline 'Health Assistants' and Family Welfare Volunteers), the study identified a lack of clarity on their roles within delivering the NNS alongside their existing tasks (which up until that point had included a range of tasks focusing on family planning and ANC referral and immunization and TB control, respectively). Frontline staff members participating within the study interviews "revealed their almost complete lack of awareness or knowledge about nutrition-related services and low exposure to NNS training" (Saha et al., 2015).

Beyond this overarching policy/political context, the role of delivery at the community level was stressed as being particularly important by several interviewees. They also focused particularly on the role of frontline health workers, though others also repeated concerns that the current NNS lacked its own dedicated cadre of community workers which had existed under the NNP – the '*Pushti Apas*' (nutrition elder sisters). The role of mobilising the whole community around issues of nutrition was highlighted, but there were mixed views on whether the community clinics were playing a key role in community mobilization – some felt they were part of a wider and ineffective service overly focused on - but unprepared to provide - curative treatment. Others, however, noted how they were now playing an important role (as part of the NNS) in disseminating nutrition messages, providing curative and preventative treatment and demonstrating nutrition food preparation. This was felt to link to higher tier facility provision including Upazila Health Complexes, which had rolled out IMCI Nutrition corners. Similarly mixed views extended to the role of the frontline health workers. Some saw them as ineffective in failing to carry out the mainstreamed nutrition tasks of the NNS, but just as often the important role of the community in driving wider underlying and basic changes in women's empowerment or reproductive health was highlighted.

Several of the interviewees also discussed issues related to exclusive breastfeeding. They pointed out that awareness campaigns increased people's knowledge about the topic and that optimal practices were now widely known. NGO-led programmes were seen to have been particularly important in driving this change. However, ensuring this practice was widespread in the population was still a challenge. Similar challenges were considered with regard to appropriate weaning practices and complementary feeding. The trials at scale undertaken by the large national NGO BRAC were singled out as having demonstrated some important progress in these areas.

6. Discussion

Notable limitations of the approach described thus far include the limits of the relatively small stakeholder sample and the fact that re-analysis of the community sample also comes with limits – not least that the original community work was concerned with wider issues of chronic poverty (Davis, 2011) and that the data was collected in 2007 and thus would not reflect on recent changes in drivers of undernutrition at a community level. The small stakeholder sample was deliberate, however, given we were also able to draw on further recent work amongst stakeholders on this topic (Taylor, 2012; Saha et al., 2015). These two limitations also appear somewhat mitigated by the remarkable consistency between stakeholder and community stories on nutrition and the picture appearing in both wider available data and multivariate analysis.

The story of nutrition-specific commitment and policy coherence revealed here is one of sporadic jumps and starts but collective

slowness in responding to the urgency of nutritional deficiencies. This is especially when compared to the more rapid and successful state responses to more politically pressing issues such as hunger and the need for rapid growth in rice production; or issues that have received more political and/or stakeholder attention such as some of the vertical health programmes and education, particularly the education of girls and young women. There are signs that this is changing - with high level political rhetoric supporting action on nutrition and a stakeholder consensus that nutrition programming needs to reach a broad base of beneficiaries across all communities. There are a comprehensive set of *policies* in place for nutrition specific action. However, it is too early to tell whether the National Nutrition Services (NNS) – as the primary government and donor supported vehicle to achieve this, will attain the substantial reach at the community level which will be required to bring down the substantial levels of undernutrition which remain. Significant challenges exist which look likely to hinder any serious community level delivery in the short term – including some of the political economy incentives which earlier studies noted were responsible for an ineffective and fragmented system (Taylor, 2012). But again, successes in other fields here also point the way in which challenges may be overcome with significant further investment, serious political attention and effective governance structures.

Challenges to nutrition-specific programming are multiplied by an historical focus on food production rather than nutritional status and a set of agri-food policies which are still missing opportunities to promote greater diversity in both production and household consumption. However, the likelihood that the vast improvements witnessed in aggregate food security since independence are part of the story of improved nutritional status should not be overlooked.

Bangladesh's health gains have been considered a paradox given weak health system and slower progress on poverty. These gains are important in the context of this study because a) some health improvements have also been shown to be significantly associated with reductions in child stunting, b) widespread service delivery is now expected to be delivered via the mainstreamed NNS/community clinics and, c) the success of programming and policy in the health sector demonstrates what can be achieved when concerted effort and significant resources are dedicated to particular issues.

Notably, as pointed out in a special series in the Lancet on the topic and by the stakeholders interviewed here, earlier vertical program successes also came with dedicated cadres of workers providing household support in the community. These were unsuccessfully trialled first at the facility level before being fundamentally redesigned to better provide household level delivery via community workers (El Arifeen et al., 2013). This remains a significant challenge for delivery of the NNS via existing community health workers. Whilst the 'mainstreaming' now applied to nutrition might be welcomed from the point of view of moving towards a more mature, less siloed, health system, early reports that community clinic workers have little knowledge of their expected task under the NNS are worrying in this regard (Saha et al., 2015). Overall, this suggests that some further prioritisation or rationalisation of the roles of frontline workers might be required if they continue to be the key to community level success and if the NNS is not to be relegated to a second order health priority.

Within other nutrition sensitive sectors, gains in sanitation status are less paradoxical given the concerted push by a number of civil society and government actors to address poor sanitation status in Bangladesh. But as with the story of gains in health indicators, it is unlikely that improvements in sanitation were deliberately targeted as a nutrition-sensitive policy to drive down rates of undernutrition – this appears to be a hidden and strong story of change in Bangladesh.

Finally, possibly one of the most significant 'stories' highlighted so far is that of the connections between nutritional status and women's education, mobility, empowerment, awareness, reproductive health, and rights and access to independent income and employment. Its importance as a story of change in nutrition in Bangladesh is indeed strong and is one which deserves due prominence in Bangladesh's story of change.

7. Conclusions

This paper set out to explain Bangladesh's story of change in nutrition via an approach which triangulates findings via several sources of primary and secondary data. 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. Pro-poor economic growth is linked in turn to improved agricultural production and diversification, a vibrant NGO sector supporting income generation and delivering basic services, expansion of non-farm business and manufacturing sectors creating employment opportunities, and remittances from labour migration. In addition, significant contributions have been made by changes in improved access to education (especially for girls); health and family planning service utilization and availability; demographic change, such as smaller family sizes and increased birth intervals, and lower age at first pregnancy; more widespread use of safe water sources and better sanitation; and improving infrastructure and electrification. These drivers of nutritional improvement are multidimensional, mutually reinforcing, and to some extent, overlapping. They are also predominantly indirect – that is they are mainly the result of economic and social development, not from programmes and interventions specifically intended to improve nutrition.

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