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Global Food Security 13 (2017) 74–82

Contents lists available at ScienceDirect

Global Food Security

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

Community-level perceptions of drivers of change in nutrition: Evidence from South Asia and sub-Saharan Africa

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ARTICLE INFO

Keywords:
Nutrition
Community
South Asia
Sub-Saharan Africa

ABSTRACT

Changes in the immediate, underlying and basic determinants of nutritional status at the community- and household-level are a logical and empirical prerequisite to reducing high levels of undernutrition in high burden countries. This paper considers these factors directly from the perspective of community members and frontline workers interviewed in six countries in South Asia and sub-Saharan Africa. In each country, in-depth interviews were conducted with mothers, other community members and health workers to understand changes in health and nutrition practices, nutrition-specific interventions, underlying drivers and nutrition-sensitive interventions, and life conditions. Overall, the need for basic improvements in livelihood opportunities and infrastructure are solidly underscored. Nutrition-specific and -sensitive changes represented in most cases by deliberate government or NGO supported community interventions are rolling out at a mixed and uneven pace, but are having some significant impacts where solidly implemented. The synthesis presented here provides an invaluable source of information for understanding how community-level change occurred against a wider backdrop of national level progress.

1. Introduction

Across the globe, countries are stepping up their efforts to tackle high levels of child undernutrition. To reach the ambitious global targets set by the World Health Assembly in 2012 (including to reduce child stunting, which represents chronic undernutrition, by 40% by 2025), national and international actors need to learn from successful (and less successful) country-level examples of undernutrition reduction. The *Stories of Change* initiative carried out mixed-methods research in six countries in South Asia and sub-Saharan Africa to bring together lessons from experiential learning in improving nutrition. While the other papers in this Special Issue address countries' respective "stories of change" as well as the quantitative changes in stunting, this paper focuses solely on community-level findings. The paper summarizes community level perceptions in changes in nutritional outcomes and determinants across six country contexts over a period of at least a decade (Table 1). It provides a unique insight into community-level changes, a yardstick – indicative rather than representative – of how far, and in what ways, national and global action has affected ground-level realities.

2. The role of community level studies in charting nutritional change

The community as a unit of study and intervention has long been established in nutrition practice and research. Work at this level has arguably spawned the most important conceptual framework, brought together by UNICEF in 1990, in response to community level experimental work in Tanzania's Iringa region (Gillespie and Hodge, 2016 – see the Lancet Nutrition Series adaptation in Fig. 1 below). This describes how the determinants of nutritional status go beyond immediate level causes in terms of nutrient intake and health/immune

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http://dx.doi.org/10.1016/j.gfs.2017.01.006
Received 30 September 2016; Received in revised form 6 January 2017; Accepted 22 January 2017

Table 1
Sampling for community-level interviews.
Source: Compiled by authors, based on information in *SoC* country reports.

	Villages/ward	Data collection methods	Respondent type and sample	Selection criteria
Senegal	**Villages: n=4.** 1 Wolof or Mandinka speaking village randomly selected in each Collectivités Locale (CL) (district subdivision); 4 CLs randomly selected from total of 9 CLs in a selected department.	**Semi-structured in-depth Interviews (IDIs)**	**FLWs: n=24.**	*CL level:* 4 community development agents (Agent de Developpement Communautaire (ADC)), 1 chief nurse of health post (Infirmier Chef de Poste (ICP)) (total n=5). Village level: 17 community health volunteers (relays), 1 female nurse (matrone), and 1 village birthing assistant (bajen gox) (total n=19).
			Mothers: n=18.	4 mothers selected per village from each age bracket, 2 additional. Age brackets: mothers with children aged 0–3, 4–7, 8–11, and 12–15. Mothers selected randomly within these criteria.
Ethiopia	**Village: n=1.** 1 iddir (informal organizing community structure / village) selected from 1 Kebele in Sodozuria Woreda in Wolaita Zone in SNNPR region. Selection of this case study area was determined by the lead researcher's familiarity with the zone, woreda, and community from previous research, as well as the opportunity to examine a community without significant NGO involvement.	**IDIs**	**Households: n=30.**	30 households randomly selected from a total of 86. Included 3 current/former PSNP beneficiaries. SSIs carried out with men and women (mix of together and separate).
Zambia	**Villages: n=8.** 4 villages randomly selected in 2 wards (Shimbizhi and Nangoma)	**Key Informant Interviews (KIIs)**	**Headmen/headwomen: n=4.**	4 Key Informant Interviews with headmen and headwomen in 4 villages
		Focus Group Discussions	**Groups of mother/ programme beneficiaries: n=14.**	14 FGDs (8 with mothers beneficiaries of the RAIN programme, 4 in each ward; 4 with men from beneficiary households, 2 in each ward; 2 with younger women, 1 per ward). Each FGD had 10–12 participants.
Nepal	**Wards: n=4.** 2 *terai* districts (1 covered by the health/nutrition programme Suaahara, 1 without a large scale health/nutrition programme). In each district, most disadvantaged village development committee (VDC[a]) selected; within each VDC, 2 wards closest to each other selected.	**IDIs**	**Mothers: n=20.**	1 mother per 5 year period in each of the 4 wards. Five year periods: mothers who gave birth between 1990 and 1995, 1995 and 2000, 2000 and 2005, 2005 and 2010, and 2010 and 2015.
Bangladesh	**Villages: n=16**, 16 villages selected from 8 districts (2 villages per district) (life history interviews conducted in 2007 and re-analyzed for purposes of *SoC*). The districts consisted of: Manikganj, NilphamariKurigram, Mymensingh, Tangail, Kishoreganj, Jessore and Cox's Bazar.	**Life History Interviews**	**Individuals: n=293**.	113 men and 160 women from 161 households, interviewed separately. Households selected as subsample of a CPRC-IFPRI-DATA longitudinal study of dynamics of poverty in rural Bangladesh (which included 2152 households (1907 original households) from 8 of 14 districts.
Odisha (India)	**Villages: n=5.** Drew from an existing study selection (from the POSHAN project[b]) of 100 villages in Kalahandi district; 5 villages randomly selected for *SoC*.	**IDIs**	**FLWs: n=20.**	5 Anganwadi Workers (AWWs); 7 Accredited Social Health Activists (ASHAs); 8 Auxiliary Nurse Midwives (ANMs) (3–5 total FLWs/ village).
			Mothers: n=25.	5 mothers selected from each of the 5 villages, so that each had a newborn between 1990–1995, 1995–2000, 2000–2005, 2005–2010, and 2010–2015.

[a] Government of Nepal defines VDCs as disadvantaged based on the following criteria: food sufficiency less than 3 months, marginalized groups, lack of access, low level of representation of women, Dalits and Janjatis in formal decision-making, and prevalence of vulnerable groups.
[b] See http://poshan.ifpri.info/

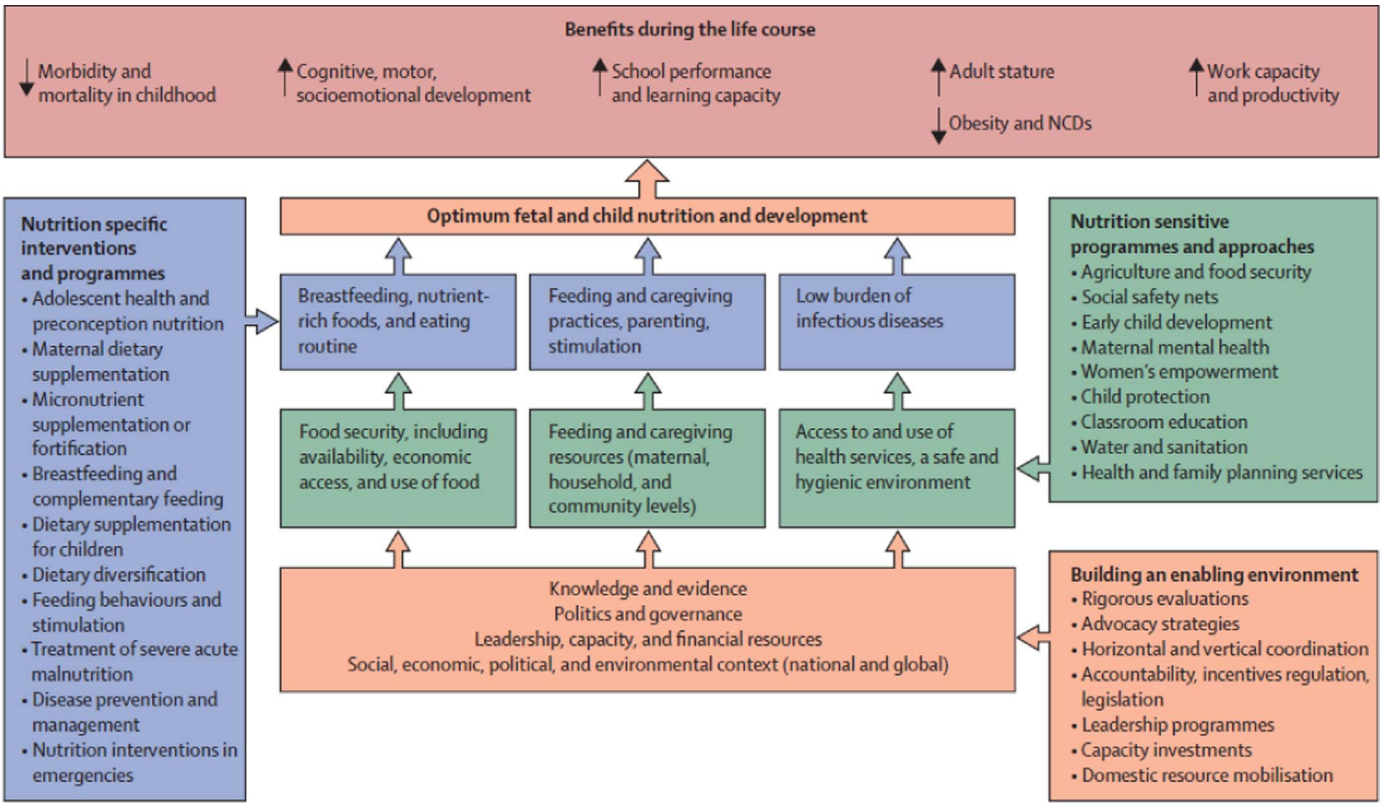

Fig. 1. Framework for action to achieve optimum fetal and child nutrition and development.
Source: Black et al. 2013.

status, to wider underlying drivers in systems of food security; care, health and adequate sanitation; to the deeper basic determinants structuring access to goods, services and political, social, and economic wellbeing.

If putting the community at the center of nutrition delivery sounds self-evident, this has not been matched in terms of recent research on interventions, nor in terms of research on community-level perceptions of change. A recent review of the lessons of community nutrition programming charts a concentration of work in the 1990s (ibid.). Whilst practice at the community level has, of course, continued, studies of the best way to bring together packages of interventions to tackle multiple community-level determinants have been vastly outstripped by work on single issues/interventions (although see Kim et al., 2017). Notably, in the Lancet series of 2008, community interventions are predominantly referred to either in the case of treatment of moderate acute malnutrition or in the case of breastfeeding promotion (Bhutta et al., 2008). In the 2013 Lancet series, more serious thought was given to delivery platforms (rather than effectiveness of single interventions) and the authors note that "[A] full spectrum of promotive, preventive, and curative interventions can be delivered via community platforms including provision of basic antenatal, natal, and postnatal care; preventive essential newborn care; breastfeeding counselling; management and referral of sick neonates; development of skills in behavior change communication; and community mobilization strategies to promote birth and newborn care preparedness." (Bhutta et al., 2013: 51–52). Some of the most important current research on 'scaling-up' nutrition interventions to a level likely to have significant impacts on high-burden populations is now focused on findings ways to deliver such community based platforms effectively and efficiently (Gillespie and Hodge, 2016).

But while research on community level intervention is arguably now resurgent, research on how communities experience nutritional change has fallen behind. A long ethnographic record of food habits and infant feeding practices (see recently e.g. Monterrosa et al., 2012a, 2012b; Hadley et al., 2010 and, for a review, Van Estirik, 2002) goes some way to filling this gap, but there is also a need[1] for broader, more multifaceted studies of community perceptions of change that go beyond feeding and food, and chart community-level changes in nutrition's wider determinants. These ought to include (see Fig. 1) considerations of wider systems of care, gender, health (including maternal health), education, sanitation, and basic livelihoods and living standards. In addition to acting as a yardstick of policy and programmatic changes, such studies can help chart how rapid change in underlying and basic determinants has been experienced by community members in relation to their nutritional situation, in ways that country-level data can only describe in the aggregate.

Methodologically, such studies have their roots in those aforementioned ethnographies, but also wider longitudinal and observational work in studies of public health and poverty (e.g. Wilson et al., 2006). Where such longitudinal or in-depth studies are not feasible, however, interview and focus-group based work within the community can draw additionally on life-course and life history studies in these disciplines, including those that have focused directly on food (e.g. Devine, 2005) and chronic poverty (e.g. Davis, 2011). Adapting such an approach to nutrition's wider determinants can aid our understanding of inter alia the "important effects of policy or system shifts on individual behavior or vice versa [and] [...] [nutrition relevant] behaviours in a changing world" (Devine, 2005: 122). At a minimum, such studies need to move beyond reporting current practices to delve into participants' recollections of how practices have changed between different generations and family cohorts and situate such practices within a wider description of the most significant or widely perceived community level changes within a particular period of time.

[1] Highlighted by accompanying papers considering country-level Demographic and Health Survey (DHS) data – Headey et al., 2017.

3. Methodology

All 'stories of change in nutrition' case studies carried out interviews at the community-level to examine how people perceived changes in their lives since at least 2000 (or as far back as 1990 in Odisha (India) and Nepal) in terms of nutrition and health, and what they perceive as current and future challenges. While each country study followed a similar methodology in terms of overall triangulation of data (Gillespie et al. this volume), study designs differed significantly in their treatment of the community level, the limitations of which we discuss here. Sampling is described in detail in Table 1, which indicates that interviews were carried out with mothers (all countries) and frontline workers (FLWs) (Senegal, Odisha), as well as with men or with couples (Bangladesh, Ethiopia), and different types of community leaders (Ethiopia, Zambia). Both Nepal and Odisha applied an additional selection criterion in choosing mothers to ensure coverage of births between five-year periods between 1990 and 2015 (e.g. 1990–1995; 1995–2000 etc).

Communities were selected according to a variety of criteria (including extensions of previous studies (– Ethiopia, Odisha); as being sites (or not) for particular government programs (– Bangladesh, Nepal) and/or were selected randomly within particular sub-national administrative divisions (Bangladesh, Senegal, Zambia). The sample size also differs from country to country, ranging from one village (Ethiopia) to 16 villages (Bangladesh), or 20 families (Nepal), to 293 individuals across 161 households (Bangladesh).

Across the studies, a standard repertoire of qualitative tools were employed (Table 1). Whilst the content of these tools differed between countries, each was concerned with perceived changes in the lives of people interviewed; their own and their families' nutritional status (or, in the case of FLWs, the status of their clients); and wider changes observed during this time in the community. Interviews mostly focused on a particular period, i.e. the period in which mothers had given birth, or the period in which a frontline worker had been working, but in the case of the Nepal and Odisha studies, these represented the selected time periods mentioned above – and all interviewees were asked to comment on change during and beyond that period. Interviews took place individually with mothers and other community members, following a semi-structured interview schedule (asking set questions but allowing for free response) and/or tracing 'life-histories', i.e. asking people to describe key events and trajectories over the course of their lifetime, with particular reference to nutrition, health and wellbeing. In some cases, mothers or frontline workers were brought together in a group interview or 'focus group discussion' (FGD) that used a similar semi-structured approach and focus. In Zambia, for example, rather than interviews, fourteen focus group discussion were held that mixed mothers and men from beneficiary households.

Interviews were analyzed using a variety of different approaches to thematic analysis – in which *a priori* selected codes and emergent themes were attached to specific passages of transcripts of the interviews, FGDs and life histories. These were then grouped together into meta-themes. Given that the overall concern here is with changes in nutritional status and changes in determinants of nutritional status over time, the results of this meta-analysis have been grouped together here under the various levels of the UNICEF framework on the determinants of child and maternal nutrition (UNICEF, 1990 and updated in – Fig. 1). The synthesis across the cases here also draws on an earlier stage of analysis conducted to bring the country level data together in the form of individual country reports.[2]

This paper's objective of synthesizing across these six separate studies leads to a number of limitations that are noted here. Whilst the studies ran concurrently, attention was paid to the coherence of each country study and the complementarity of methods chosen therein (see accompanying papers in this volume), rather than developing a community level protocol to be followed rigidly across each country study. In one case (Bangladesh), Stories of Change researchers employed a rich existing data set (collected in 2007), rather than collecting new data, as new data collection proved impossible during this study (due to security issues) and because these data roughly corresponded with the period covered by the quantitative analysis of existing DHS data sets (1997–2011).

Limitations also exist in the assumptions that can be drawn from sampling from particular districts and even villages with varying base conditions, access to government services and so on – particularly given the small sample size (e.g. one village in Ethiopia). The use of the term 'community' must also be considered with caution in the following analysis, given the differences in samples described above and in Table 1. Further limitations include the focus on rural rather than urban communities, where we note significant transitions taking place in urban food environments (Hossain et al., 2015) with likely significant consequences for future burdens of malnutrition. Limitations also stem from a potential limited recall of participants and a potential bias towards reporting what is perceived to be positive change.

Ultimately, readers are asked to consider this synthetic work as part of a wider mixed methods study in which the qualitative, community level work here provides a detailed snapshot of changes experienced at a community level. This is intended as indicative of, and supportive of, those national level trends and developments, but not necessarily representative of them.

4. Findings

Many papers following the UNICEF framework start from the top and work down, beginning with the presence of immediate determinants in terms of direct health and nutritional support factors and then proceeding to their related underlying and basic determinants. Based on the community data examined here, however, it is perhaps easier to work in the other direction, as the process of change has been a gradual one, with - in most cases - profound shifts in basic determinants at the national level (including economic growth, livelihood opportunities and the progressive roll-out of government services to communities). These in turn, shape the environment for underlying and immediate drivers of change. This approach structures the presentation of findings in this paper, with further summaries available in Tables 2, 3.

4.1. Overall perceptions of change – poverty, basic services and nutrition

In all country case studies, community members spoke of their perceptions of change in their communities. In most cases this was described in terms of reductions in poverty and improvements in access to services, but in some cases community members reflected directly on nutritional change. This section therefore also serves as an introduction to the general situation of the study communities.

In *Bangladesh* and *Odisha* there was strong overall perception of improvements in quality of life across all cohorts of mothers and households interviewed. Basic improvements ranged from wood, brick and concrete dwellings replacing mud or bamboo huts, to an increase in roads and infrastructure (including the tube-wells critical for water access and increased agricultural inputs). In Odisha, government programs and initiatives were seen as being strongly associated with overall improvements, whether through subsidies for housing, the provision of subsidized food, or other social protection schemes, and/or via schemes to improve access to education and improved roads (the latter associated with improvements in care for mothers and children via the provision of / improved access by ambulance). In Bangladesh, respondents noted government social protection programs, but also a wider range of income generating activities including: business activities, land accumulation, livestock-based enterprises, improved agri-

[2] These are currently unpublished.

Table 2
Summary of changes in underlying and basic drivers and associated programs as reported in the six community case studies (2000–2015 – Ethiopia, Senegal, Zambia) (1991–2015, Nepal, Odisha); (1990–2007, Bangladesh).

Country and time frame for change analysis	Domain of major change in underlying or basic drivers of nutritional outcomes	Reasons for change
Bangladesh	1. Poverty reduction 2. Wealth enhancement 3. Improved agriculture, more food security and dietary diversity 4. Education 5. Gender	1. Entrepreneurship activities, microfinance 2. Various livestock enterprises 3. Social protection programs and education stipend programs 4. Opportunities in labour market for women 5. School enrolment and educational parity programs
Nepal	1. Improvement in housing e.g. mud to concrete 2. Labour-based migration 3. Better road infrastructure and electricity 4. Improvement in school enrolment 5. Improved sanitation access	1. Government investments in road infrastructure and electricity provision 2. National open defecation free campaign 3. General awareness that education is important for girls as well as for boys
India (state of Odisha)	1. Housing improved to wooden/concrete 2. Roads and drinking water infrastructure (tube-wells) 3. Increase in agricultural production 4. New schools and higher levels of schooling offered 5. Poverty reduction 6. Women's conditions improve 7. More latrines and more awareness of WASH issues	1. Housing subsidies 2. Government support for infrastructure 3. Increase in use of fertilizers 4. Government support for education 5. Social protection programs (e.g., NREGA and pension scheme) 6. Women in village leadership position / women's self-help group programs and improved education 7. Latrine provision by government
Ethiopia	1. Increase in agricultural production	1. Government natural resource management, environmental rehabilitation, soil and water conservation schemes 2. Agricultural extension worker inputs; improved seeds and fertilizers 3. Productive Safety Net Programme labour for land preparation
Senegal	1. Expansion of village and district-level health posts providing basic health services	1. Increase in government and NGO health-related programs
Zambia	1. Better education and nutrition knowledge 2. Gender: greater awareness of women's empowerment, some changing norms	1. Increased provisions of services by NGOs 2. Improved intra-household distribution and community awareness about the need to change traditional norms around gender-based food distribution 3. Improved local economies

Table 3
Change in immediate determinants and related programs as reported by study communities (2000–2015, – Ethiopia, Senegal, Zambia) (1991–2015, Nepal, Odisha); (1990–2007, Bangladesh).

Country	Areas of significant change	Reasons for change, as noted by respondents
Bangladesh	1. More births in health facilities	1. Frontline family welfare assistants
Nepal	1. More births in health facilities 2. Improvement in pregnant women's access to health care services with more clinic and health centers	1. Introduction of specific community health and nutrition programs 2. More NGOs supporting health and nutrition services
India (state of Odisha)	1. More births in health facilities 2. Increase in advice on pregnancy, birth and child care 3. Improved newborn practices 4. Programs for malnourished children 5. More use of hospitals/doctors to treat child illness 6. Increase in illness care for malaria and TB	1. Scale-up of government health and nutrition programs. 2. Improved health and nutrition services via the community nutrition centers (*anganwadis*) 3. Receiving treatment at home via health extension workers
Ethiopia	1. Awareness about nutrition (though not practice)	1. Some (but poor) contact with health extension workers
Senegal (2000–2015)	1. Improved quality and expanded reach for free nutrition services such as: screenings, preventative care, education, and care for MAM and SAM 2. Some improvement in antenatal and postnatal care services 3. More births in health facilities 4. Improvements in nutrition education and general knowledge and awareness of nutrition 5. More women following exclusive breastfeeding advice	1. National nutrition programme increased nutrition services by coordinating collaboration between NGOs, local development agencies, and existing national health structures. The programme expanded the reach of community health volunteers bringing free health services for nutrition.
Zambia	1. Increased health facility use for pre- and postnatal services 2. Improvement in pregnant women's diets 3. More health facility births 4. Better breastfeeding practices 5. Immunization services more widely available 6. Improvement in children's clinic attendance 7. Improvement in knowledge about nutrition and HIV	1. More NGO provided services in health, nutrition and agriculture 2. More health centers 3. Initiatives to increase pre-and post-natal checks and institutional births promote clinic attendance

culture and fish farming, day-labour, microfinance, sons' or daughters' employment, support from relatives/inheritance, and social protection programs. Community members associated this improved wealth with several benefits within the community, including improved health, food security and dietary diversity.

Similar changes were noted by mothers in *Nepal* with regard to increased provision of (some) health services and education. Nepali mothers, like those in Odisha, talked about parallel improvements in housing with a transition away from mud, wood and bamboo to bricks and cement. But the story in Nepal was also one of expectations and

demands having increased greatly in terms of basic human and social development, with mothers expressing hopes for further improvements in roads and health infrastructure, as well as economic opportunities to decrease the need for labour based migration, (which was not, however, always associated with raising household income). Government and aid agency schemes were both mentioned as playing a role in this wider community development; specific community health and nutrition programs, described in more detail below, were also mentioned.

In *Zambia*, community members noted improved intra-household distribution of food, improved community awareness of nutrition, NGO activities, and improvements in local economies in terms of overall changes. These changes were linked to improvements in nutrition. However, interviewees also felt that increases in food prices, poor crop yields and dependency on chemical fertilizers (that cost money) had adversely affected nutrition. Overall, community members reported varied access to health, nutrition and agricultural services, and a direct comparison was made between the relatively low expectations of government services and high expectations of NGO services (though notably the study site was one in which there was presence of a large international NGO).

In *Senegal*, respondents generally qualified positive descriptions of overall changes in noting persistent challenges. These included inconsistencies in improvements, difficulties of access and limited financial capacity. Structural challenges were mentioned, such as poverty, lack of access to water or poor transportation. Improvements in health programs were also reported, which were associated with NGO and other local development agency provision (i.e. via the partners supplying the national nutrition programme).

The communities studied in *Ethiopia* present probably the biggest contrast to the overall optimistic story unfolding in the other study communities. Notably, for the analysis that follows, the study area should be considered marginal in terms of its limited access to markets, mountainous terrain, depleted soils due to erosion, and smaller-than-average farm sizes. While not necessarily typical, this landscape and the challenges it presented are not unknown across the various agro-climatic zones in Ethiopia (Mengitsu, 2003). Villagers spoke most positively about improvements in agricultural production and bringing more land into production (next section), but relative to the other country studies, livelihoods opportunities appeared the hardest or sparsest, even given these improvements in agricultural support. The lack of roads was mentioned as the primary constraint on all aspects of life and livelihoods in the area, limiting access to markets. Health crises and severe droughts (eight years and three to four years prior to the research) were also cited as significant life-altering factors that triggered coping strategies such as taking children out of school, selling household assets and, as a last resort, selling livestock. The government's social protection scheme, the Productive Safety Net Programme, was not reported to have reached many households (3 out of 30 in the study area), but the scheme, which includes a public works element, was seen as significant in terms of providing labour for terracing land.

In many communities, both attitudes and access to education had changed significantly over the study period. In Ethiopia, however, households reported substantial challenges in educating children, because of the aforementioned need to withdraw them at times of crisis, including the related costs of uniforms and books, or because of poor access and provision more generally. However, education was now recognized here as being the primary pathway towards income generating activities in the future, in the perceived absence of opportunities for agriculture.

Gender relations were directly discussed in *Nepal*, *Bangladesh*, and *Zambia*. In Nepal, mothers mentioned the importance of equal treatment of sons and daughters, particularly for schooling. Some also mentioned that community programs should be inclusive of men, who have been left out of many opportunities. In Bangladesh, a number of gender related improvements were reported, including parity in school enrolment and educational achievements as well as participation in NGO income supporting activities and growing opportunities for women in Bangladesh's labor market. These changes were in turn seen as the basis for some wider demographic changes, reported below, relating to delays in age of marriage, age at first pregnancy and overall family size. Community level changes were supported by the introduction of a dedicated cadre of family welfare assistants, who promoted birth control and stipends for girls attending school. In Zambia, it was felt that not much had changed with regard to gender relations, with the bride price paid by men's families and the virilocal system contributing to a poorer position of women. However, interviewees believed women were thought to have an improved say over intra-household food distribution, and the existence of women's plots had also improved women's control over diets and income.

4.2. Underlying determinants and activities targeted at the underlying level

Underlying determinants in terms of household food security, care practices and the wider health and sanitation environment also underwent significant changes in the study communities according to the data captured by the studies.

In *Bangladesh*, people spoke of the fact that they no longer went without food and compared this to earlier times of severe food insecurity in the country, especially around the time of independence from Pakistan in 1971. Significant increases in agricultural production following increased fertilizer use and the introduction of the additional 'boro' rice crop in the winter, alongside tubewell irrigation were seen as the key factors for these changes, though there were still reported cases of people going without food or without meat or expensive vegetables, resorting to eating freely available, locally-grown plants with rice. Similar references to increased agricultural production linked to green revolution technologies were mentioned in *Odisha,* as was the importance of government assistance in terms of subsidized food and social protection schemes, which have also helped support food security.

Respondents in *Ethiopia* also mentioned having witnessed improvements in food security thanks to the agriculture-related government initiatives (extension, inputs and soil/watershed conservation), which community members linked to improved crop yields. Though many of the households had received encouragement from government extension workers to grow a variety of vegetables, most of the households relied on taro, enset and yams for the bulk of their diet, with animal based proteins and fats not figuring largely in people's diets as they are unavailable or prohibitively expensive. Most households reported only being able to consume meat two or three times a year, rarely consuming eggs and consuming dairy only if fortunate to own a cow. Despite the reported increase in agricultural yields, most farmers reported consuming nearly all of what they grow but found this inadequate to fulfil household needs. The government extension programme, while linked to increased yields, was also perceived as a double edged sword in that the pressure to use and pay for additional inputs such as fertilizer and pesticides was also linked by community members to increased and unsustainable debt. This had its own impact on household food security, with farmers selling crops at the earliest opportunity, often at low prices, to meet loan repayments.

Among the study communities, the most commonly reported change was improved *access to health services*. This included general access to primary services/health centers located in the communities and in local areas; facilities providing further primary or secondary care serving wider areas and an increase in nutrition relevant services including antenatal care and facility based births, vaccinations and screenings for children and community based nutritional counselling (the latter services are reported in the next section).

Improved water, sanitation and hygiene practices were also mentioned in half of the studies. Increases in latrine use and hygiene behaviours were noted as the most significant improvement of the past

five years in *Ethiopia* (though with open defecation, particularly of children, and exposure to animal faeces in the homestead environment still the norm). In *Odisha*, mothers also noted improvements in drinking water via access to tube wells and in *Nepal*, mothers noted access to toilets at home and in schools and increased access to water through individual household or shared hand pumps (as opposed to common hand pumps, bore wells and water fetched from the river previously).

4.3. Immediate determinants and actions targeted at the immediate level

Collectively, changes in the basic and underlying determinants and the overall situations of communities described here have led to significant changes in the immediate determinants of child nutrition. These included dietary intake and child health status; and related improvements in ante-natal and post-natal care (ANC/PNC) and facility births.

In many of the communities, changes to women's access to health care for birth delivery represented some of the largest changes experienced, with the majority of mothers in recent years having given birth in facilities in *Nepal*, *Zambia*, *Odisha* and *Bangladesh*. However, in *Senegal*, most mothers indicated that a home birth is generally the first choice and that the health center is a fall back in the case of complications. There was no great urgency seen in changing practices and transportation costs were still seen as prohibitive, though views varied depending on how remote the village was.

Very few of the women interviewed in *Ethiopia* had given birth at a health center, although women were acutely aware of the benefits of doing so and expressed willingness if it were possible. The lack of access to health facilities in the event of childbirth was emphasized as one of the greatest challenges but also one of the greatest desired improvements mentioned by interviewees. Access to such birthing facilities in the area was limited due to the lack of a road or ambulance services, or a facility within easy walking distance.

In the past five to ten years, many of the communities had encountered community based antenatal care (ANC) and postnatal care (PNC) services and community nutrition advice or provision for the first time – represented in most cases by a community nutrition or health worker or ANC provider.

In *Odisha*, *Bangladesh*, *Nepal*, *Senegal* and *Zambia*, village health workers were working in the communities directly, providing either broader family welfare support (Bangladesh) or a mixture of targeted health and nutrition support (others), which had improved the level of ANC care and facility births. In *Nepal*, for example, all mothers who gave birth after 2010 had received ANC checkups and most had taken iron and folic acid supplements, whilst only a few who gave birth prior to 2010 had. Mothers here mentioned several government and donor programs focused on dietary inputs and care, growth monitoring and wider health promotion. In *Odisha*, frontline workers also reported that care for specific illnesses had increased, including malaria treatment and prevention of tuberculosis.

There were mixed results across all communities with regard to actual Infant and Young Child Feeding (IYCF) practices - mothers across all time periods breastfed their infants, at least for the first few months, and there was specific mention of giving children colostrum in *Odisha* and *Nepal* and wider recognition more generally of the importance of exclusive breastfeeding. However, practices regarding other optimal IYCF practice were more mixed, including continued exclusive breastfeeding until six months, timely introduction of complementary feeding, and appropriate dietary diversity for children and mothers. This is likely because programs addressing infant and young child feeding are not yet implemented at scale in many of these countries, or had not been running for sufficient time to bridge the gap between knowledge/awareness and practice.

Improved access to such health and nutrition services was prone to vary depending on individual communities studied. In *Zambia*, for example, study communities reported experiencing varied access to health and nutrition services, with home visits by health extension workers in many communities, but not in all. There was general agreement however that more government and NGO provided services in health and nutrition are available than in the past – with improved children's clinic attendance, vaccination rates and encouragement to utilise ANC and PNC cited as examples. The reported increase in institutional births had an impact on wider PNC – women were reported not to be subject to traditional post-natal cleansing, had received better advice, and were pursuing better practices on breast-feeding, in addition to receiving information about birth spacing, family planning and IYCF (including, appropriate IYCF practices in the context of living with HIV).

In *Senegal*, study communities had seen a significant increase in the number of volunteer frontline workers following implementation of the national nutrition enhancement programme (the *Programme de Renforcement de Nutrition)* by NGOs and other local development agencies, which was scaled up in 2009. Such workers have been behind a reported improvement in services targeted at children, including screenings, vaccinations and provision of moderate or severe acute malnutrition (SAM/MAM) care. The latter was directly linked to perceived benefits for their children by respondents.

In *Ethiopia, households* noted the existence of health extension services, but in contrast to many of the other study communities, they reported that they had not had a visit in the last year and most of the children in the community sample had not been vaccinated. Staffing challenges at the local health post had limited access to healthcare and home visits in the area. Generally, respondents did not seek help unless conditions were a significant impediment to general life, given long wait times, poor supplies or distance to travel. Health extension workers were said to focus mainly on vaccinations (though with poor coverage), meaning that other important forms of community based care are neglected, including ANC. Mothers reported no changes in IYCF practices or wider dietary diversity, given the wider lack of food availability and resources. Nutrition information was regarded as unhelpful in this regard because mothers felt that the majority of the recommendations (where provided) were not feasible. On this latter point, a similar situation existed in *Senegal*, where whilst growing awareness of dietary requirements was also mentioned, some noted that although they had bought more diverse foods, or were aware of the benefits of a diverse diet, they mostly did not have the financial means to ensure dietary diversity and were restricted to a traditional diet of Senegalese couscous (millet) or mafé (peanut sauce).

Across many of the communities, another important finding of note with regard to IYCF and wider care was the variety and evolution of sources of advice on appropriate practices. In *Odisha*, for example, it was noted that in the early 1990s, older women advised on the particular types of foods to be consumed during pregnancy but in later years, frontline workers played an increasingly important advisory role for pregnant women; although some traditional practices continue to exist, including the use of exorcists for the treatment of diarrhea and herbs in use for the treatment of fever. In *Senegal*, a mixture of sources of advice were reported with regard to exclusive breastfeeding, including some traditional practices such as giving a newborn water at birth (proscribed by religious leaders), and/or throughout the first six months of a child's life. In *Zambia*, by contrast, biomedical approaches were thought to be increasingly favored over traditional / herbal remedies and had been part of a wider improvement in children's clinic attendance and uptake of immunization.

5. Discussion

Overall, results from community-level research reflect some of the changes that have taken place at these countries' higher administrative levels with regards to nutrition-relevant policy making, programming,

and, to a certain extent, coordination. The changes in national indicators reported in the accompanying papers (Cunningham et al., 2017; Harris et al., 2017; Kampman et al., 2017; Kohli et al., 2017; Nisbett et al., 2017; Warren and Frongillo, 2017, all this volume) are national level averages of key nutrition outcome indicators, which do not necessarily reflect the experiences and changes observed at community level (for which these numbers are not specifically available, and for which the sample sizes would be very small). Capturing the lived experiences of the respondents in these communities, however, provides a glimpse into how lives have or have not changed over the past two decades, and an idea of what types of challenges these communities continue to experience. These changes, discussed above, are summarized here in Table 2, which covers basic and underlying factors, and Table 3, which focuses on immediate level changes.

This paper's methodological approach needs to be seen in a dual light - as part of a careful and detailed triangulation of the data synthesized elsewhere in this volume (Gillespie et al., 2017), and as a contribution to filling a gap that appears in community level studies on nutrition. When such studies stand on their own it is worth restating the limitations in terms of drawing wider conclusions based on the sampling. We have highlighted the diversity of approaches here to both sampling strategy and size, and to the mixture of methods and time periods considered (Table 1). These have been a significant limitation in attempting to synthesize across six diverse studies. Nevertheless, we note that the synthesis of community level findings here was part of an attempt to triangulate with broader data. Reading across these diverse pieces it appears possible to draw some broad conclusions on similarities in processes of change and outstanding challenges that are not out of keeping with the conclusions of the aggregate pictures contained within DHS data for these six countries (Headey et al., 2017).

Some of the strongest changes occurring and noted within the communities appeared to be around the availability and use of health services, particularly antenatal care, institutional births or births attended by medical professionals, services such as vaccinations and screenings, and ambulatory services (particularly in Senegal, Zambia, Nepal, Odisha). In most cases these had been aided or driven by an increase in number and reach of frontline workers and health infrastructure (although respondents in Ethiopia reported a decline in the quality, coverage and consistency of support from Health Extension Workers with adverse effects on health). The accompanying papers in this volume provide further detail on the policy and programmatic reasons for such changes.

5.1. Outstanding challenges

Broadly speaking, research reveals that awareness and knowledge about nutrition issues have improved over time in these particular communities (with the exception of the community in Ethiopia). The picture on practices, however, has been more mixed – with some improvement in, for example, reported use of colostrum or exclusive breastfeeding, but an apparent plateau in many contexts in complementary feeding, particularly with regard to dietary diversity. Notable also, in relation to the field of IYCF, is that although sources of knowledge have changed in favor of advice provided by frontline workers and medical professionals, in most cases less optimal forms of advice and practice persist.

Contrasting the improved primary health picture with slower progress on community nutrition provision / IYCF support may reflect the more recent appearance (and resurgence) of community nutrition interventions that we highlighted at the beginning. These compare to nearly four decades of steadier efforts on primary health care following the 1978 Alma Ata declaration.[3] In the national contexts considered here, the contrasting and greater focus on health when compared to specific nutrition interventions may also be a result of the fact that popular political initiatives and/or populist politics sit more easily alongside the visible siting of health services within a community (in the form of community clinics and frontline staff delivering hard inputs). Such is nutrition's low profile that services such as home based nutrition counselling are unlikely to raise many votes. More visible aspects of development such as roads and other infrastructure were also very clearly identified by communities here as significant changes and again, more likely to be prioritized given the political returns. However, given nutrition's multicausal nature, we underline that this is not an either / or scenario. When it comes to the actual nutritional benefits that may have accrued to these communities (as opposed to the perceived benefits charted here), it is some of these basic and underlying drivers which that have been most strongly associated with changes in child stunting (Headey et al., 2017). Nor should it be concluded that, with time, nutrition cannot be made into a vote winner, if suitably framed, as wider global literature has shown (Keefe, 2016; Mejia Acosta and Fanzo, 2012).

[3] Albeit with mixed progress towards this particular goal – see Walley et al. (2008).

6. Conclusions

This paper has attempted to describe the processes of change around nutrition in selected communities in six countries that have been experiencing wider change in nutritional status, documented as part of a wider multi-methods study (Gillespie et al., 2017). Changes here were diverse but also cluster around some common factors across nearly all countries. *First,* we see an underscoring of the need for basic improvements in livelihood opportunities both locally and nationally and accompanying enabling investments in infrastructure such as roads. *Second*, we see how nutrition-specific changes, represented in most cases by deliberate government or NGO supported interventions at the community level, are rolling out at quite a mixed pace, but are having some significant impacts where solidly implemented. And *third,* we see just how important similar roll-outs have been in terms of wider health services (particularly antenatal and maternity services), but also, in some cases, other initiatives that affect the lives of women and girls in particular, such as improved school enrolment and stipends and support for reproductive choices. Alongside sanitation (a more mixed picture here but some improvements), these underlying pathways are often neglected in the options presented to countries that want to significantly improve their nutritional status. These community level data (and the accompanying quantitative analysis – Headey et al., 2017, this volume.) strongly highlight their importance alongside targeted community nutrition initiatives; just as they reveal the importance of more investment in the latter, in order for some of the more stubborn nutrition indicators are to shift.

Funding statement

The Stories of Change initiative was supported by the Children's Investment Fund Foundation (CIFF), London, UK (Grant# Stories of Change); UKAID from the Department for International Development (DFID) through the Transform Nutrition Research Consortium (PO5243) and the Leveraging Agriculture for Nutrition in South Asia (LANSA) Research Consortium (PO5773); the CGIAR Research Programme on Agriculture for Nutrition and Health (A4NH); and the Bill and Melinda Gates Foundation, Seattle, WA through the Partnerships & Opportunities for Strengthening and Harmonizing Actions for Nutrition in India (POSHAN) Programme (Grant #OPP1016740).

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Seollee Park, Pooja Pandey Rana, Akriti Singh, Mara van den Bold, Andrea Warren, Sivan Yosef, and Amanda Zongrone.

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