

AN OVERVIEW AND REGIONAL PERSPECTIVE ON THE ASSESSMENT OF NUTRITION CAPACITY OF NATIONAL AND MID-LEVEL PERSONNEL CARRIED OUT IN THREE ASIAN COUNTRIES

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Acronyms

ADB: Asian Development Bank
AEW: Agriculture Extension Worker
ANC: Antenatal Care
ANM: Auxiliary Nurse Midwife
ASEAN: Association of Southeast Asian Nations
BFHI: Baby Friendly Hospital Initiative
BINP: Bangladesh Integrated Nutrition Programme
BMI: Body Mass Index
BRAC: Bangladesh Rural Advancement Committee
CAR: Country Assessment Report
CCT: Conditional Cash Transfers
CEDAW: Convention on the Elimination of all forms of Discrimination Against Women
CHV: Community Health Volunteer (Nepal)
CIP: Comprehensive Implementation Plan (on maternal, infant, and young child nutrition)
CRC: Convention on the Rights of the Child
DBM: Double Burden of Malnutrition
DHS: Demographic Health Survey
EAPRO: UNICEF East Asia and Pacific Regional Office
ENA: Essential Nutrition Actions
EU: European Union
FAO: Food and Agriculture Organization of the UN
FCHV: Female Community Health Volunteer in Nepal
FCMV: Female Community Multipurpose Volunteers (Bangladesh)
FDI: Foreign Direct Investment
GMP: Growth Monitoring and Promotion
HMIS: Health Management Information System
ICESCR: International Convention on Economic, Social and Cultural Rights
INGO: International Non-government Organization
IUNS: International Union of Nutritional Sciences
IYCF: Infant and Young Child Feeding
LBW: Low birth weight
LMICS: Low and Middle Income Countries
LNS: Lancet Nutrition Series
MCU: Maternal and Child Undernutrition
MDG: Millennium Development Goal
MIS: Management Information System
MO: Medical Officer
MOH: Ministry of Health
MOHP: Ministry of Health and Population (Nepal)
MOHSW: Ministry of Health and Social Welfare (Bangladesh)
MPH: Masters in Public Health
MSNP: Multi-sectoral Nutrition Plan (Nepal)
MYCNSIA: Maternal and Young Child Nutrition Security Initiative in Asia

NCD: Non-communicable Disease
NGO: Non-government Organization
NNC: National Nutrition Centre (Nepal)
ORS: Oral Rehydration Solution
PHN: Public Health Nutrition
PHSL: Public Health Solutions Limited
PKH: Program Keluarga Harapan (Indonesia) cash transfer program
PKK: Family Welfare Movement in Indonesia
PMAS: Poverty Monitoring and Analysis System (Nepal)
PNPM: poverty reduction program (Indonesia)
PNVU: Public Nutrition Virtual University
PRSP: Poverty Reduction Strategy Papers
REACH: Renewed Efforts Against Child Hunger
ROR: Regional Overview Report
RPJMN: National Medium Term Development Plan (Indonesia)
RUTF: Ready-to-use therapeutic food
SAM: Severe Acute Malnutrition
SBCC: Social Behaviour Change Communication
SEAMEO TROPMED: Southeast Asian Ministers of Education, Tropical Medicine and Public Health Network
SUN: Scale Up Nutrition
UNICEF: United Nations Children's Fund
USAID: United States Agency for International Development
VDC: Village Development Committee
WHA: World Health Assembly
WHO: World Health Organization
WPHNA: World Public Health Nutrition Association

Executive Summary

In order to further support the ‘Scaling Up Nutrition’(SUN) interventions that lead to improved maternal and child nutrition in the Asian Region, the East Asia and Pacific Regional Office (EAPRO), with support from the European Union (EU) has carried out an assessment of nutrition capacity of national and midlevel personnel in three countries in Asia. The primary purpose of this assessment is to inform EAPRO how best to support actions for the development of nutrition capacity to address Maternal and Child Undernutrition (MCU) at the country level. The assessment gains increased importance because of the World Health Assembly (WHA) resolution urging member states to implement a Comprehensive Implementation Plan (CIP) on maternal, infant and young child nutrition, with six global targets for 2025 including a 40% reduction in young child stunting.

This Regional Overview Report (ROR) draws on the findings and recommendations coming from the three country studies carried out in Bangladesh, Nepal and Indonesia, as well as further information available concerning relevant aspects of nutrition capacity in the region outside of the three countries assessed. Each Country Assessment was carried out by a two-person team of nutrition experts, all members of the World Public Health Nutrition Association (WPHNA) capacity building task force, during country visits of eight to ten days in the period November 2012 through February 2013. The WPHNA team, supported by a local team provided by the UNICEF country office, conducted qualitative interviews with key nutrition informants, as well as a desk analysis of the assembled literature. Based on these inputs the WPHNA teams assessed the system, organizational, workforce, and community level factors which need to be addressed in order to build nutrition capacity, and prepared the Country Assessment Reports (CAR). The draft CAR were each reviewed, critiqued and revised according to feedback from the local teams and returned to the UNICEF country office for approval.

The ROR includes an analytical section on the nutrition situation, since the CAR all encountered considerable confusion around nutrition concepts and definitions at all levels. The purpose of this section being to state up front the definitions and concepts involved in public health nutrition, including an understanding of different levels of causality and the importance of the life-course dimensions of the Double Burden of Malnutrition (DBM), i.e. both undernutrition and overnutrition.

Undernutrition continues to be a problem in all three countries, with stunting affecting around 40 to 50% of young child. These levels have been falling at a rate of between 1.0 and 1.5ppts/y in Bangladesh and Nepal and 0.6ppts/y in Indonesia since the mid-nineties. In order to be in line with the WHA global target of a further 40% reduction by 2025, Bangladesh and Nepal will need to achieve an annual rate of reduction of 1.2ppts/y from 2011, and Indonesia 1.0ppts/y from 2010. Overnutrition is already a concern in Indonesia especially, where 12% of under-fives are overweight. Maternal

overweight/obesity is also becoming a problem in both Bangladesh and Nepal with 10% of mothers so affected and increasing, and in Indonesia with 21% of women affected.

In consideration of the need to focus efforts on scaling up community level activities in particular in order to accelerate stunting reduction, the ROR assessment begins at the lowest level, i.e. the community, and then tries to see how to build up from there, and assess what exists, what is missing, what the challenges and opportunities are for strengthening such capacity in each of the countries.

All three countries have large contingents of community workers engaged in nutrition activities, although the organization and structure of these differs. Indonesia has a million volunteers organized by local government, while Nepal has 50 thousand volunteers organized by the health service, and Bangladesh has many thousands of volunteers organized by a plethora of nongovernmental organizations. Community-based health and nutrition programmes can be very successful, especially if they have the essential elements of community ownership, adequate population coverage, targeting, and central support for supplies and training. However, in order to ensure impact of the nutrition interventions a certain level of intensity of effort has to be ensured, with optimal ratios of not more than 20 households with children under five per volunteer/mobilizer. It is not possible from the CAR to assess the coverage of the community based programmes and whether these levels of intensity of effort are being achieved, but it seems most unlikely.

None of the three countries is currently delivering behaviour change activities at scale at the community level in order to improve maternal, infant and young child feeding. This is largely because there isn't the dedicated workforce available (in the health system especially) that has the required competencies to facilitate the community mobilizers. Indonesia has some 120, 000 village midwives that could perform these tasks if such a priority was given to them. Health staff in all three countries are inequitably distributed, with shortages as well as inappropriate skill-mixes. Although Indonesia has fifteen thousand nutrition professionals in the health service, their role is unclear and more clinically oriented than preventive, while Nepal and Bangladesh only employ nutritionists in a central role. Much of the nutritional knowledge of the non-nutritionists in the health system (e.g., doctors, nurses and midwives) is outdated, their nutrition competencies limited to more clinical and curative activities, and their job descriptions are without nutrition responsibilities. Fortunately, there are various sets of materials available for training health sector as well as community workers in the nutrition actions needed to improve maternal and child undernutrition and these are already beginning to be employed in all three countries. Hiring local NGOs to fill the gap using external donor funds could offer a model for the short term, and this has been done successfully in Bangladesh and is beginning to happen in Nepal.

None of the countries has a district level position with responsibility for oversight and management to ensure that all of the nutrition related interventions, be they in the health

system or in the community, are being carried out correctly. The interventions being delivered through the health system are more curative than preventive. Micronutrient programmes are the most common, with salt iodization and periodic vitamin A capsules together with deworming achieving high coverage. Very few if any health facilities in any of the three countries are “Baby-Friendly” and the Code of Marketing Of Breast Milk Substitutes is hardly respected and enforced anywhere. Equipment such as balances and height boards, are frequently non-existent in health facilities, and/or staff are not trained to use them properly. Access to information systems that relate to nutrition is relatively poor, and where it exists, its use for decision making has yet to be developed. On the job training and/or continuing professional development in public health nutrition is yet to become a reality, and only Indonesia has a professional association of public health nutritionists. Bangladesh and Indonesia have many academic institutions producing nutrition graduates, while Nepal has none. Few if any tertiary education institutions produce graduates in public health nutrition, and few if any require any “practical internships” for learning on the job how to practice that which they learn in theory in the class room¹. National level coordination for nutrition across sectors is far from optimal in all three countries, and only Nepal has an active high level multi-sectoral nutrition coordination body.

In all three countries the right to education, to a healthy environment and medical care, to the opportunity to work, and to social security are included in the constitution, the very basis of national legislation. In all three countries progress towards achieving the rights to health, employment and social security is measured by a country's progress towards the Millennium Development Goals (MDG). Measures to achieve the MDGs have been included in National Poverty Reduction Strategy Papers (PRSPs) as well as medium and long term plans for national development, which provide the basis for annual government work plans and state budgets. Despite this high level commitment, the lack of clarity about nutrition definitions and concepts, as well as a focus on hunger and severe malnutrition means that very little priority is given to ensuring a high level of coverage of preventive nutrition interventions. Although all three countries have medical councils that provide certification of doctors, and dentists and have a register of such professionals that are practicing, none of the three has an independent national institution or council that registers and certifies competency of nutrition professionals. Accreditation of academic institutions and especially for those providing public health nutrition courses do not yet exist.

The ROR concludes that while there are many “nutritionists” in these Asian countries, the majority have been trained in clinical or individual based nutrition which is often outdated and more focused on research than on managing nutrition programmes. A

¹ An exception to this is the James P. Grant School of Public Health in Bangladesh, where, for nutrition training, they are actively encouraging their graduates to go and work for at least 6 months in the districts “on the front line.”

significant number of health, educational, and agricultural personnel from different administrative and programmatic levels will need training and/or re-training in public health nutrition. But that alone will not be enough. To change mind-set and practice will require a concerted effort at all levels of government and society over a considerable period of time.

In view of constraints encountered at system, organizational, workforce and community levels in all three countries, a series of recommendations are made with a short, medium and long term perspective. The recommendations are directed at the country level and extrapolated to the regional office, and are not what UNICEF alone should be doing, but what it should be advocating for others to be doing as well. The short term priority, building on the opportunities created by the recent upsurge in nutrition's profile, is to resolve the community and workforce level constraints and create capacity to accelerate stunting reduction. Although the medium and long term perspective recommendations aimed at organizational and system level cover the three to five year and five to ten year period, they all need to be started now.

The short terms recommendations are to work with country level staff in each country to identify a few suitable districts for full implementation of public health nutrition inputs required for short term improvements in all six of the WHA nutrition objectives, including stunting, maternal anaemia, low birth weight and IYCF targets. Transitional public health nutrition capacity support should also be provided for capacity development to each country and district. The highest priority is to build the capacity to manage community based programmes that combine nutrition education with income generation and/or conditional cash transfers aimed at empowering women in particular.

Introduction

In spite of the relatively good economic growth observed in Asia in recent years, there are continuing unacceptably high prevalence rates of maternal and child malnutrition, with insufficient progress in stunting reduction in particular. The lack of progress in child stunting may well be a reflection of increasing inequalities in income, as well of persisting inequities related to gender and education, for example.

In 2012 the World Health Assembly (WHA) passed a resolution that endorsed and urged member states to put into practice a Comprehensive Implementation Plan (CIP) on maternal, infant and young child nutrition, which should include a comprehensive approach to capacity building and workforce development¹. The CIP² further established six global targets for 2025 including: (i) a 40% reduction in young child stunting; (ii) a 50% reduction in anaemia in women of reproductive age; (iii) a 30% reduction in low birth weight; (iv) no increase in childhood overweight; (v) increase to 50% in the rate of exclusive breastfeeding in the first six months; (vi) reduce and maintain childhood wasting to less than 5%.

The Scale Up Nutrition (SUN) framework³ highlighted the importance of strong national capacity to implement at scale the interventions that can address many of the causes of Maternal and Child Undernutrition (MCU). Recognising that the capacity to act in nutrition in many Low and Middle Income Countries (LMICS) is insufficient at national, district and community levels⁴, the main emphasis of the SUN movement was stated to be on the need to sharply scale up support for nutrition programmes and capacity development. However, although a task force (i.e., SUN Task Force A) was established for country capacity development⁵, no SUN guidance has been forthcoming on how or what to do with regard to nutrition capacity development. The Sun progress report (2011-2012) informed that the SUN capacity development task force has evolved into specific “Knowledge and Research” task teams⁶, with a current focus on building capacity to track funds invested in nutrition, and validate results to improve data collection systems. The UN REACH approach⁷ in coordination with the local UN agencies is also supporting the assessment and analysis of nutrition problems affecting children and women, building consensus around this analysis and the priority actions required, and assisting in translating these actions into policies and programs as well as operationalizing the programs and activities in 12 countries⁸.

To help give more children in Asia the best start in life, the European Union, has partnered with UNICEF to support a new initiative to tackle Maternal and Child Undernutrition. Such an initiative warrants the development of a comprehensive approach to the problem with preventive and curative nutrition interventions being delivered during the 1000 days from conception to two years of age, the most critical period in the lifecycle, and that reaches out to ensure coverage of the poorest households.

In order to support LMICS better to strengthen their nutrition capacities in a comprehensive manner, it is critical to understand (i) the existing capacities, (ii) where the strengths and gaps are, (iii) what needs to be developed or strengthened, and (iv) the limitations and opportunities for doing this⁹. The capacity that needs to be created must be to ensure the acceleration of stunting reduction in particular, and for this reason not only draw on the recommendations of the Lancet Nutrition Series (LNS) for a package of efficacious interventions (i.e. “what” interventions to use), but also draw on experience from nutrition programmes – especially community based ones¹⁰¹¹-- that have proven successful in accelerating the reduction of undernutrition¹².

It is in this context that the UNICEF East Asia and Pacific Regional Office (EAPRO) has undertaken a multi-country nutrition capacity needs assessment for the national and sub-national (district) levels as part of the joint UNICEF-EU Maternal and Young Child Nutrition Security Initiative. While the primary purpose of this assessment is to inform UNICEF regional office(s) how best to support actions for the development of nutrition capacity to address MCU at the country level, it will also inform governments about their current capacity needs and assist them in developing their plans to build nutrition capacity of national and mid-level (i.e., district-level) staff in relevant sectors in order to accelerate stunting reduction.

Methodology

The choice of Nepal, Bangladesh and Indonesia for in-depth assessment through this project was based on their high rates of stunting and wasting along with a high prevalence of anaemia in women and children. All three countries are Low and Middle Income Countries (LMICs) with relatively large population sizes. While Indonesia is the largest with a population of 260 million, Bangladesh is intermediate with 160 million and Nepal has just 30 million. All three are “SUN” countries with a declared intention to scale up national programmes to tackle MCU; Bangladesh and Nepal are both REACH countries.

The three countries were each visited by a two-person team of nutrition experts, all members of the World Public Health Nutrition Association (WPHNA) capacity building task force¹³ coordinated through Public Health Solutions Limited (PHSL), an international consultancy firm. Each country visit lasted for a period of eight to ten days during the months of November 2012 through February 2013. Whilst in country the two experts were supported by a local team provided by the UNICEF country office, including leading national Public Health Nutrition (PHN) experts as well as nutrition staff from the UNICEF office (See members of teams in Annex 1). Prior to the country visits the local team assembled all previous assessments and available literature on nutrition and nutrition capacity from central government down to community level. The literature included policy documents, situation analysis, strategic plans, technical reports and published articles. A list of key interviewees was also developed, and appointments arranged as appropriate.

While in country the two WPHNA experts conducted qualitative interviews with key nutrition informants including: government stakeholders at various levels, donors and UN system, NGOs, professional organizations, academic and research institutions. During these interviews the experts asked deliberately open-ended questions to see how the interviewee responded, trying not to influence their answers. They requested the interviewee to indicate whether they had nutrition as part of their work remit, and if so, what it entailed; if the interviewee had received any nutrition training, and if so, what that comprised, or if not, whether they wanted training and in what areas. They also were asked if the institution they had any affiliation with carried out any nutrition training and what the orientation and curriculum entailed. As appropriate the interviewees were also asked what they thought was needed in terms of training in order to scale up nutrition and implement their National Nutrition plans, and how this could best be achieved.

While in country the experts expanded on their preliminary desk analysis of the assembled literature, in order to assess nutrition capacity at the system, organizational, workforce, and community levels⁹. Based on the interviews and the desk analysis the experts assessed the adequacy of the existing capacity to scale up nutrition interventions, in order to identify gaps/weaknesses and opportunities to build such capacity. Based on this analysis and before leaving the country the WPHNA experts gave an informal oral debriefing with the local country office team, and agreed to send a draft report back to the local country office team for their approval within a week. The three country reports were each reviewed, critiqued and revised according to feedback from the country teams and returned to the country office for approval.

This Regional Overview Report (ROR) was prepared based on the three Country Reports and supplemented with other information sources as necessary, largely obtained by searches of the world-wide-web. The ROR considers the system, organizational, workforce and community level capacities encountered at the country level, as well as any complementary information on capacity building resources available at the Regional level. The aim of the ROR is to make recommendations to the UNICEF Regional Office as to how best it might support country offices in the scaling up of nutrition for accelerated stunting reduction in the countries of the region. A draft of the ROR was shared with other members of the WPHNA task force for comments and feedback. A final draft of the ROR was then prepared that brought together these various considerations and recommendations and was submitted to UNICEF EAPRO for final approval.

Because of the considerable confusion around nutrition concepts and definitions encountered at all levels and in all three countries, the ROR includes an analytical section on the nutrition situation. The purpose of this section is to state up front the definitions and concepts involved in public health nutrition, including an understanding of different levels of causality. Another purpose of the analytical section is to increase awareness among readers of the report of (i) the importance of nutrition across the life

course, (i.e., not just during the first 1000 days,) (ii) the fact that ten (out of twenty) major global risk factors for disability and mortality are nutrition related,¹⁴ (iii) of the importance of prevention through better diet and more physical activity across the life course to reduce the burden of obesity and diet related non-communicable diseases (NCDs) later in the life course. The intent of this latter part is to raise awareness of the increasing and potentially overwhelming financial burden of NCDs that will beset countries, particularly LMICS, that fail to recognize and prevent the nutrition precursors of adult onset diseases¹⁵.

Although the immediate short term focus of this assessment is on capacity to scale up interventions for tackling MCU and accelerating stunting reduction, the growing overnutrition problem, will require that this be broadened, upgraded and consolidated over the medium to long term to deal with the Double Burden of Malnutrition (DBM) across the life-course.

Results

The Nutrition Situation Analysis

The purpose of this analysis is to define the concept of public health nutrition, and to establish a common understanding of nutrition status nomenclature. Public health nutrition focuses on issues that affect the whole population rather than the specific dietary needs of individuals. The emphasis of public health nutrition activities is on promoting healthy growth and development as well as on disease prevention. For that reason the analysis looks at the immediate, underlying and basic causes of malnutrition, including both overnutrition and undernutrition.

Undernutrition is assessed in various ways. “Underweight” is when a child weighs less than expected for their age, but as it doesn’t take height into consideration its utility as an indicator is limited. “Stunted” is when a child doesn’t have the height expected for their age. Stunting is due to poor length growth during the period from conception to two years of age, and is also associated with reduced learning and earning potential later in life. “Wasted” is when a child doesn’t have the weight expected for height. Wasting (also referred to as ‘thinness’ in some papers) is the result of acute or short term food inadequacy, which unlike stunting, can be recuperated by ensuring adequate food intake. Undernutrition of micronutrients is also common and can contribute to growth failure as well as other body dysfunctions, such as anemia in iron deficiency, goiter in iodine deficiency and impaired sight in vitamin A deficiency.

Overnutrition is most commonly measured as “overweight” and “obesity” which is when a child or adult has more weight than expected and/or is desirable for their height. Overweight is caused by eating more food than is needed in excess of what is being expended, leading to accumulation of body fat. “Obesity” is excessive weight for height (i.e. more than just overweight), and is recognized as a disease condition. In adults this

is commonly measured by the Body Mass Index (BMI), which is weight divided by the height squared. The desirable limits of BMI are established based on risks of morbidity and mortality.

The nutritional status of mothers and young children as well as the factors which condition these nutrition outcomes in the three countries are shown in Table 1, which also presents data for the Region of South Asia and the Region of East Asia and Pacific for comparison purposes. The classification of causes as immediate, underlying and basic comes from the conceptual framework of UNICEF¹⁶. The underlying causes of “Food” “Health” and “Care” are each considered essential, but alone insufficient, such that all three need to be satisfied for nutritional status to be guaranteed. Although the table includes categories that impact on both undernutrition and overnutrition, many of the indicators for causality relate mostly to undernutrition. The causality of overnutrition spans the life-course and is far less hierarchical, in addition to being far less studied.

Young child stunting rates are not that different across the three countries, with around 40 to 50% so affected. It seems remarkable that they are so similar, despite the very different low birth weight rates. Young child stunting rates in Asia fell from 48% to 28% between 1990 and 2010, which is a 42.7% reduction, or 1.0 ppts/y over the period. In Bangladesh stunting rates fell from 59.7% in 1996 to 41.4% in 2011, which is 1.2 ppts/y. In Nepal stunting rates fell from 64.5% in 1995 to 40.5% in 2011, which is 1.5 ppts/y. In Indonesia stunting rates fell from 48.1 in 1995 to 39.2% in 2010, or 0.6 ppts a year. In order to be in line with the WHA global target of a further 40% reduction Bangladesh and Nepal will need to achieve a reduction rate of 1.2 ppts/y from 2011, and Indonesia 1.0 ppts/y from 2010 to 2025.

It is important to remember that changes in national rates of reduction in stunting may not be representative of progress of the whole of the nation. In Indonesia the gap in rates of stunting between the richest and poorest quintiles increased from 10 percentage points to 19 percentage points between 2007¹⁷ and 2010¹⁸. During this period, the prevalence of stunting among children in the richest quintile fell from 30% to 24%, but among children in the poorest quintile it increased from 40% to 43%. For this reason it is imperative to ensure that efforts to accelerate stunting reduction reach vulnerable populations in the lower economic quintiles.

National representative data on child overweight is less easily available, but evidence is accumulating that this is beginning to be a problem in many LMICs. The WHA goal is no increase in young child overweight levels. In Indonesia 12% of under-fives are already overweight, and this is tracking through into adolescents¹⁹. Maternal overweight/obesity is also becoming a problem in both Bangladesh and Nepal with 10% of mothers so affected and increasing²⁰, and in Indonesia 21% of women already so classified²¹. The increases in global overweight/obesity among adults began about three decades ago, and while it has doubled globally in the last three decades, it has tripled in LMICs in just two decades²².

It is likely that the overnutrition problem in Asia is much larger than it looks. Constrained foetal growth not only causes stunting, it also causes “metabolic programming” with extra fat tissue laid down in preparation for a “scarce” environment in life outside the womb²⁴. The body fat content is typically double in the stunted Asian than it is in the non-stunted Caucasian with the same BMI. For this reason the cut-offs for defining overweight and obesity, which are based on the risk of developing Cardiovascular Disease (CVD), are lower (BMI=23 and 27 respectively) in stunted populations of Asia²³. Furthermore if stunted children have accelerated weight growth later in childhood, there is an increased risk of obesity and other diet-related Non-Communicable Diseases (NCD), such as Type 2 diabetes and cardiovascular diseases (CVD).

Immediate Causes

The immediate causes of child undernutrition include inadequacy of dietary intake as well as the occurrence of infections. The feeding of infants in all three countries is equally bad with less than a half exclusively breastfed to six months, and three quarters of 6-8 month olds not yet on semi-solid foods. Among those children under five who had diarrhoea the percentage who were treated with Oral Rehydration Solutions (ORS) and continued feeding was twice as high in Bangladesh (68%) as in Nepal (37%) with Indonesia intermediary (54%). Diarrheal incidence also still remains high in the region with three attacks per year, and more in poor young children²⁴. Some infections have been controlled through the high rates of immunization of children. For example, more than 80% of infants are vaccinated against measles in the three countries, which has led to measles becoming a very rare event.

Estimates of individual dietary intakes can be obtained by a variety of methods, but most are only suitable for research purposes. Few if any national representative data on the adequacy of individual adult energy intake exists due to prohibitive costs. The most practical and affordable for large scale use is the food frequency method. The adequacy of micronutrient intakes are quite commonly inferred indirectly. Iodine intake adequacy is judged by the presence in a household of adequately iodized salt; rates for this are better in Bangladesh than in Nepal and Indonesia. The periodic distribution of vitamin A capsules achieves high coverage in all three countries, and is thought to protect against inadequate intakes, but such protection probably only lasts for four months²⁵ and capsules are distributed just twice a year.

The immediate cause of overweight is energy imbalance, which is caused by either overeating and/or not getting enough exercise. Adequate exercise is considered to be at least 30 minutes a day of moderate exercise on at least 5 days of the week. With urbanization, exercise is greatly reduced, and in Indonesia for example two thirds of children age 10-14 years do not get enough exercise. As for food intake it is not so much “how much” food as “what type” of food that seems to be important, with ultra-processed foods being the major concern especially because they have a high glycaemic index, i.e., they produce a high and prolonged glucose level in the blood stream after

ingestion, which seems to enhance insulin resistance.²⁶ A study in adults in the USA found an average annual weight gain of 1.5kg over a four year period to be most strongly and negatively associated with the intake of vegetables, whole grain, fruits, and nuts and most positively associated with the intake of potato chips, potatoes, and sugar sweetened beverages²⁷.

Underlying Causes

The food *availability* per capita is quite similar in the three countries, being almost the same in Nepal and Bangladesh and just 10% higher in Indonesia. However, estimates of food adequacy are notoriously difficult to obtain, with different methods having their specific advantages and disadvantages²⁸. Availability estimates, derived from food balance sheets, which have been produced by FAO for several decades are the most common. Evidence based on food balance sheets indicate the overall food supply has increased steadily over the last two decades, with greater increases in animal food than in vegetable food sources. There has also been a process of “westernization” of national diets, with increases in milk and dairy products and wheat bread and baked foods leading the way²⁴. Many of these are imported foods and originate in the EU and USA, where their production benefits from subsidies, making them relatively cheap.

When looking at health related factors linked to undernutrition, there are various differences across the three countries. Attendance at antenatal care is much better in Indonesia, as are the proportion of births attended by skilled health workers. In Bangladesh and Nepal only about a quarter of births are attended by skilled health workers. In all three countries although the majority get their water from an improved source, they don't have adequate sanitation. Indeed a quarter of Indonesians are still defecating in the open. Parasitic infections as a result are still common in each of the three countries, with studies showing overall prevalence as high as 66% in rural Nepal²⁹, 49% in adolescent boys in a Bangladesh study,³⁰ and 69.7% in pregnant women in Central Java, Indonesia³¹.

Maternal and Child Caring practices are linked to cultural values and traditional beliefs handed down from one generation to the next. The rates for early initiation of breastfeeding for example are quite similar with less than a half of new-borns being put to the breast within an hour of birth in all three countries. Maternal caring practices are quite different, however. Despite the legal age of marriage for women being 18 years in Bangladesh a third of women get married before 15. In Nepal, half of women get married before 18 even though the legal age for marriage is 20. In Indonesia although the legal age for women to marry is 16 years only 20% are married before 18. Teenage pregnancy rates are 13% in Bangladesh, 10% in Nepal and 5% in Indonesia. These are indicative of the very unequal status of women in society across the three countries and likely to be one of the reasons why low birth weight rates are higher in Bangladesh and Nepal as compared to Indonesia.

Basic Causes

Basic causes of malnutrition are related to the adequacy of natural, material and human resources. Indonesia is the richest country, with most of its economic growth coming from the exploitation of its abundant natural resources. Income per capita in Bangladesh and Nepal is about a quarter of that in Indonesia. Poverty rates are also much greater in Bangladesh and Nepal with a half of the population below the poverty line, as compared to Indonesia with just one in five. Poverty rates are broadly based on household expenditure surveys, of which food is but a part. Income disparities are greater in Nepal than in either Bangladesh or Indonesia, with the top ten per cent earning fifteen times more than the bottom ten per cent, as compared to just seven times in Indonesia and Bangladesh.

Lack of education is another basic cause of malnutrition. The adult literacy is about a half in Nepal and Bangladesh whereas it is virtually universal in Indonesia, where all ethnic groups are educated in one common language. Ethnicity is also often related to undernutrition rates, with minority groups generally worse off. While Bangladesh has one dominant ethnic group with over 80% of its population Bengali, Indonesia and Nepal are far more diverse with the Javanese the largest group (40%) in Indonesia and the Khas representing 40% of the population of Nepal. Ethnic inequalities are probably greatest in Nepal because the dalits are considered “untouchable”, making their insertion into society extremely difficult.

During the last century the world has experienced remarkable economic growth, with a nine fold increase in per capita income of a global population that grew six fold.³² However, economic growth has been highly uneven such that there is a twenty-fold gap between the richest economy, the United States’, and the poorest region of Africa today, compared to a fourfold difference a century ago³³. Between the 1960s and 1990s inequality increased in about two-thirds of 73 countries (accounting for about 80 per cent of the world’s population) studied by Cornia et al³⁴. They also found that in those countries where inequality increased, this was normally equivalent to at least 5 points in the Gini scale. Although there is evidence that global inequality has declined in the last two decades³⁵, the World Economic Forum has still rated severe income disparity as the most likely risk the world will face in the next decade³⁶.

Because income inequity is so great, efforts to improve nutritional outcomes must surely find ways to ensure that the vulnerable among the poor are preferentially reached and benefited.

The Three Country Nutrition Capacity Assessment

Capacity, most simply defined, is the ability to carry out stated objectives³⁷. Capacity development and capacity building, terms often used interchangeably, essentially refer to the process by which individuals, groups, organisations and societies increase their ability to perform, solve problems, define objectives, understand and deal with

development needs to achieve objectives in a sustainable manner³⁸. Experience in the health sector more generally has shown that training of health professionals is only one element in health systems improvement, and will not in itself make a difference unless there is commensurate attention paid to the other elements: finances, management information system, infrastructure and logistics, service delivery and governance^{39 40}. Frequently, capacity building efforts translate into little more than a one-off training, which unless it is part of a broader initiative, is merely palliative and not likely to lead to sustained improvements.

A practice framework has been proposed to guide the assessment of nutrition capacity in LMICS that are embarking on scaling up interventions to tackle MCU⁹. This framework proposes that assessments should not focus on training or increasing the knowledge and skills of the workforce alone, but also consider capacity development in the context of (i) the overall system of policies and governance issues which influence how and where those capacities will be employed, (ii) the organizational and institutional structures that impact on performance and practice of capacity; (iii) workforce structures that can either facilitate or inhibit the ability of workers to function efficiently and effectively, (iv) and community levels where the capacity of often multi-purpose workers impact on the families they directly serve.



Figure 1: Ecological systems analysis

level dimensions concern factors which more directly influence the ability of the workforce to act.

In consideration of the need to focus efforts on scaling up community level activities in particular in order to accelerate stunting reduction, the assessment begins at the lowest level in the Table, i.e. the community, and then tries to see how to build up from there,

This framework is diagrammatically represented in the accompanying figure (Figure 1) that represents an adaptation of the ecological system of social and developmental analysis as presented by Bronfenbrenner¹.

These four dimensions of nutrition capacity are further explored for each of the three countries in Table 2. While the system level is more concerned with the policy dimensions of capacity, the organizational, workforce and community

¹ Ryan DPJ. Bronfenbrenner's Ecological Systems Theory, CMS-kids 2001 [cited 5; 2008]. Available from: http://cms-kids.org/providers/early_steps/training/documents/bronfenbrenners_ecological.pdf accessed on 05 June 2013

and assess what exists, what is missing, what are the challenges and opportunities for strengthening such capacity in each of the countries.

Community level

This level focuses on, and acknowledges the importance of community development in overall nutrition capacity development. Efforts to strengthen the capacity to improve nutrition should recognize the need to actively involve “beneficiaries” in the processes to improve nutrition and so to progressively realize their rights⁴¹. The development of and expansion of social capital – the social relations that have productive benefit – has a known effect on nutrition and community responses to external challenges.

Community participation is a continuum that can be built gradually to move from the traditional “top-down” welfare type passive recipient type participation towards active “bottom up” management of community resources by communities themselves to achieve better nutrition outcomes for the whole community¹¹.

Community workers

Community workers provide a critical link between communities and their health and social services systems⁴². The organization and structure of the community workers differ across the three countries. In Indonesia the community volunteers are “community based” and belong to the Family Welfare Movement (PKK), which is a women’s organization run by the wives of local government civil servants. There were said to be over a million of these volunteers or cadres, working in 260,000 village health posts (Posyandu) across the 497 districts. In Nepal there are approximately 50,000 Female Community Health volunteers (FCHVs) that are “facility based” and are affiliated with around 3,100 Sub-Health posts in all 75 Districts. In Bangladesh, there is not one standard model of community health programme supported by government, but rather a proliferation of efforts by nongovernmental organizations. The largest run by BRAC has approximately 25,000 unsalaried community health workers called Shastho Shebi (SS)⁴³. The MOHSW in Bangladesh is now proposing to establish female community multipurpose volunteers (FCMVs), a cadre similar to FCHV in Nepal, in a phased approach covering 25% of communities with high malnutrition rates and difficult access.

Previous estimates of the numbers of community health workers that would be needed to scale up community based nutrition programmes so that the reduction of child undernutrition rates would be accelerated in Asia were provided by the ADB/UNICEF assessment of how nutrition improves⁴⁴. For Bangladesh in 1990 the estimate was that 1.28 million mobilizers were needed to achieve national coverage, at a ratio of 1:500 people, or 1 per 100 households with children under five, and that this would cost US\$67.5 million a year. The actual coverage at that time was around 10% of the total population with an intensity of 1 mobilizer per 200 households with children under five.

Community Organizations

Community organizations, be they mothers' groups or health committees often linked to the local council, are the essential elements for carrying out community based activities. In "facility based" community programmes the volunteer typically comes to the health facility, perhaps monthly, to meet with their "supervisor", normally an auxiliary nurse or midwife. In "Community-based" initiatives however, an external "supervisor cum facilitator" perhaps from the health service, meets with the volunteers in their communities.

Community-based health and nutrition programmes can be very successful, especially if they have the essential elements of community ownership, adequate population coverage, targeting, and central support for supplies and training¹². The activities usually carried out include breastfeeding support and promotion of appropriate complementary feeding often linked to growth monitoring promotion (GMP) as well as other health activities such as water and sanitation, oral rehydration for diarrhoeal disease treatment, and referral for immunization. Often the activities go beyond health and include poverty reduction and household food security for example⁴⁵. These activities are typically realized during monthly meetings that are held either in somebody's house or in some community building, and even, in some communities, under a tree. While GMP was not included by the LNS as an effective intervention, it is well recognized that it can be an effective platform for delivery of multiple community based interventions⁴⁶. But perhaps the most important component of these successful programmes is the strength and frequency of the supportive supervision given to the community mobilizers by the facilitator/supervisors, wherever they come from.

Experience with community based programmes in many countries suggest that in order to ensure impact of the nutrition interventions a certain level of intensity of effort has to be ensured, with optimal ratios of not more than 20 mobilizers per facilitator and not more than 20 households with children under five per mobilizer⁴⁷. If these levels of intensity of effort are not ensured over a sufficiently wide coverage, then no impact will be seen at the population level, and so the resources invested are largely lost. Well-run "community based" nutrition programmes costing about \$10 a household per year can achieve an annual reduction of child undernutrition rates greater than -1.5ppts a year⁴⁷.

Community based nutrition programmes that combine nutrition education together with income generation among the poorest households seems to be the most effective. In Bangladesh the Shouhardo community based programme funded by USAID and run by Care has achieved a 4.4ppts a year decrease in stunting over the initial four year period. The programme combined direct nutrition interventions such as child feeding with indirect interventions that empower women, including income generation activities⁴⁸. In Indonesia, two programmes have linked cash transfers to health and education service delivery conditionality's with success. The PNPM Generasi is an incentivized community block grant program whereby villagers undertake a social mapping and participatory planning exercise to decide how best to use block grant funds to reach 12

education and health targets related to maternal and child health behaviour and education behaviour⁴⁹. The Program Keluarga Harapan (PKH) provides quarterly conditional cash transfers (CCTs) via the Post Office to mothers in poor households, in return for their and their children's participation in local education and health services⁵⁰. Both approaches have had positive evaluations.

Social capital development

Social capital development can result from community based programmes that help with the delivery of nutrition interventions. As mentioned above, community capacity should evolve from the traditional welfare passive recipient type participation towards active community management of its own resources to achieve better outcomes for the whole community¹¹. Such community based efforts to strengthen the capacity to improve nutrition must recognize the need to actively involve “beneficiaries” in the processes to improve nutrition and so progressively realize their rights. A diagonal approach that links goal achievement as stepping stones to the realization of human rights can be engineered with the right sort of facilitation and mobilization⁵¹. Achieving such a diagonal approach essentially requires that community health workers, be they part-time or “volunteers”, come under local government supervision or under that of organized and representative local structures, and that local government has a broad community development approach that includes achieving targets in health as well as education and agriculture, for example.

Social capital is known to affect nutritional status¹. Communities with higher levels of social capital are better able to withstand economic and other shocks. The two most common types of social capital – bonding (among members of a group that is more or less homogenous) and bridging (between two dissimilar groups joined by a common cause) – could provide a structure for community empowerment, particularly around nutrition sensitive public goods like environmental improvement, educational attainment, and reduction of adolescent pregnancies. This concept not only applies to the way communities can support themselves through collaboration around common cause, but how organizations can unify to support and strengthen the efficiency and effectiveness of their programs for better outcomes. “Linking” social capital is a newer concept that represents the bond between different levels of a hierarchy – usually between government structures and the citizenry – where trust is developed in the belief that government bodies, or others in power, are actually there to help the community achieve its goals and objectives.

Evidence of empowering social capital in the communities examined was weak, though a full assessment of it may require a more in-depth investigation. Most communities

¹ Carter MR, Maluccio JA. Social capital and coping with economic shocks: an analysis of stunting of South African children. *World development*. 2003; **31**(7): 1147-63.

were passive recipients (or non-recipients) of aid and of government services, failing to organize as claim holders of essential rights to health and food. Though none of the three countries currently have the capacity to achieve this level of community development at scale in the short term, that should not stop this being a medium and/or long term objective for community capacity development. Both Nepal and Indonesia have the greatest potential for doing this because of the decentralized nature of government together with a tradition for “bottom up” development through “block grants” that has been created over several decades. The challenge however is how to focus these on achieving accelerated stunting reduction and avoid them being used purely for political purposes.

Leadership

Leadership is perhaps the most critical element for strengthening the community capacity to contribute to improved nutrition outcomes, and usually this has to come from outside the community. In “community based” programmes an external worker, often from the health sector “facilitates” the work of a community volunteer who is the “mobilizer” who brings mothers together for the pursuit of the agreed objectives and activities. The volunteers typically receive some locally organized cascade training in order to be able to carry out their work, but there is no national or international standard here.

Supervision of community volunteers is provided by health staff in the nearest health facility in two of the countries. In Indonesia, supervision is provided by ~120, 000 village midwives who are located in the villages where the Posyandu cadres and their mothers live. They (midwife and the cadres) meet with the mothers and their children to be weighed and have growth cards filled in at the monthly Posyandu session held in the village⁵². In Nepal the Auxiliary Nurse Midwives that supervise the FCHVs are located in the 3,100 sub-health posts, and the FCHVs meet with them once a month at the health post. The FCHVs then work with the Mothers' Groups in the communities that they come from. The volunteers in Bangladesh have been largely organized by NGOs to date, but the model now being proposed by the MoHW is that the Community Health Care Provider, located in the Community Clinic, will oversee and supervise the FCMVs from that community, although the logistics of that are not clear.

None of the three countries is currently able to mount behaviour change activities at the community level in order to improve maternal, infant and young child feeding especially at scale. This is largely because there isn't the dedicated workforce available in the health system especially, to carry out the monthly outreach to the community mobilizers.

Hiring local NGOs to fill the gap using external donor funds could offer a model for the short term, and this has been done successfully in Bangladesh and is beginning to happen in Nepal. However, long-term application of this would require a revision in the type of NGO networking and linking with government initiatives that is not always seen

in these countries. Bangladesh probably has the most developed network of NGOs, and they should be supported to bring standards and competencies to their work with local community groups while not relinquishing the independence that characterizes their identities. Making such programmes more sustainable by funding them from within national development programs (i.e. not just as donor funded projects), as well as being capable of being further developed to tackle the DBM as well as the burden of disease this will bring with it, is the challenge that needs to be faced over the medium and long term.

Workforce level

This level includes the knowledge, skills, and attitudes required of those involved in carrying out nutrition related tasks at different levels of the nutrition system. This includes not just nutritionists, but also doctors, nurses, midwives, teachers, and Agriculture Extension Workers (AEWs), for example. The competencies required by these personnel need to match the appropriate models of service delivery for ensuring the improved nutritional outcomes desired (i.e., includes prevention of undernutrition and overnutrition, treatment of macro and micronutrient deficiencies, and nutritional rehabilitation). Also included are the materials and job-aids needed to effectively complete these tasks.

Competencies

Competencies are the ability to do a particular activity to a prescribed standard; they reflect what people can do rather than just what they know. A competency framework has been proposed in order to orient the development of effective public health nutrition practice at the various levels of the health service⁵³. The building blocks of such a framework include different components/determinants of capacity such as leadership, nutrition status assessment, analysis of causes and intervention management for example.

In all three countries, the nurses, midwives, obstetricians, and paediatricians should all be providing nutrition interventions as part of their daily routines. Unfortunately, much of the nutritional knowledge of the non-nutritionists (e.g., doctors, nurses and midwives) is quite outdated, and their nutrition competencies limited to more clinical and curative activities. This is hardly surprising as the nutrition content of medical doctors' training is recognized to be deficient even in the USA⁵⁴ and UK⁵⁵.

There is also a need for somebody at district level at least with oversight of and responsibility for ensuring that all of the nutrition related interventions are being carried out correctly. Unfortunately, there does not seem to be such a person acting in this capacity in any of the three countries.

Workforce preparation

Workforce preparation and continuing professional development are central platforms for capacity development at the workforce level. The challenge is to provide guidance to the many health professionals at the periphery of health services who deliver nutrition specific interventions often without technical preparation or equipment to do so. Enabling them to build capacity at the community level is especially challenging. Fortunately, there are various sets of materials available for training health sector workers in the nutrition actions needed to improve maternal and child undernutrition.

Among the capacity development material available is a set of generic tools for programming and capacity development on community based IYCF counselling developed by UNICEF. The basic instrument is a set of counselling cards⁵⁶, aimed for use in diverse country contexts, and it comes with a package of tools to guide local adaptation, design, planning and implementation of community based IYCF counselling and support services at scale. To date, some 20 countries are at various stages of adapting the materials to the local context, building capacity and rolling out community based IYCF counselling and communication using the package. The Core group has also designed training material to assist in the scaling up the Essential Nutrition Actions (ENA), which go beyond just IYCF. This comprises a trilogy of materials including a booklet on Key ENA messages⁵⁷, the ENA Framework Training Guide for Health Workers⁵⁸ and the ENA Framework Training Guide For Community Volunteers⁵⁹.

Continuing professional development

Continuing professional development is an important area to consider; competencies related to preventive nutrition related interventions require practice to become perfect. Perhaps the most important element of continuing professional development is on-going supportive supervision. The supervision of the nutrition workforce essentially requires somebody who is well trained and competent in the various public health nutrition related tasks and who are capable of taking on such a “supportive” role. These could and should be the local lead nutrition person at the health centre or district level, be they nutritionists or health professionals trained in nutrition. This is an area that all nutrition related professional associations could/should be promoting.

The problem, however, is that this role of the local and/or district nutrition supervisor, who can provide on-going professional development of nutrition skills of doctors, nurses and midwives, is not recognized in any of the three countries. Furthermore, in all three countries there is a lack of professionals with the competencies to manage (through supportive supervision) the required nutrition related interventions, both preventive and curative, being delivered by others be it in the health system or in the community based outreach.

Materials and job-aids

The materials and job-aids must be available for these personnel to be able to perform their tasks. In all three countries there is no guarantee that a working balance for

weighing children or a height board for measuring child length is available in a health post, or health centre. The lack of these instruments is a reflection of the lack of nutrition competences in the training of medical professionals, and the lack of standard protocols which explain how to do this at the health centre level. If available, few staff use such instruments correctly, especially the length board. In addition very few of the health centres in the three countries can blood haemoglobin levels be determined, and sphygmomanometers may only be available in district hospitals.

On-the-job training

On-the-job training to develop the workforce to act in nutrition at such a scale will obviously require new and/or unconventional methods. Waiting to train enough Masters and Bachelors level graduates capable of creating the capacity needed with other workers (in health and other sectors) or for community mobilization will require considerable investment over several decades. While more nutritionists are trained and public health nutrition get better reflected in medical/nursing curricula, on the job training is necessary. In the meantime and in order to meet the challenge and provide sufficient human resources in the short term, people must be able to train “on the job”. A mixture of distance learning and periodic coming together with tutors and mentors makes this both economically and logistically more feasible.

Innovative models have been developed, such as the approach used by the School of Public Health of the University of the Western Cape, South Africa. There, they have provided access to master's level public health education through distance education for health professionals from approximately 20 African countries while they remain in post.⁶⁰ Improved availability of the internet provides other opportunities. A proposal to develop a Public Nutrition Virtual University (PNVU)⁶¹ is well advanced, although still waiting funding. This would establish a “virtual faculty” that follows a common syllabus/approach, building on existing institutions in LMICs that would issue the certificates, providing these countries with a flexible resource of training, mentoring and support from external institutions while the local capacity is strengthened. Such an approach would also need to include supporting a cascade process to develop capacity down to the village level.

Organizational level

This level considers the nature of organisations working in nutrition-related areas, including government service delivery sectors, NGOs, as well as educational and training institutions. Included are factors that develop, support and enable the workforce to be effective, ranging from workforce preparation, leadership, and resources available, to human resource management systems and the workplace culture that the nutrition workforce is embedded in. This level is critically important in enabling the nutrition related workforce to effectively and efficiently perform workforce functions and deliver nutrition interventions⁶².

National level coordination

National level coordinations considered to be important for multi-sectoral nutrition programmes, is far from optimal in all three countries. Previous experience with multi-sectoral nutrition programmes suggests the importance of a high level coordination forum that can periodically agree to and sign off on the national nutrition plan and budget⁶³. The SUN Movement framework for action³ proposes “three ones”, namely: One agreed framework that provides the basis for coordinating the work of all partners; One national coordinating authority with a broad multi-sectoral mandate; One agreed national monitoring and evaluation plan. National level coordination is strongest in Nepal, where an inter-ministerial coordination forum has been created in the Ministry of Planning that brings together both nutrition and food security programme areas. In Bangladesh, the overarching National Nutrition Council chaired by the Prime Minister exists, but hasn’t met for several years. Inter-ministerial coordination for the national nutrition programmes lies with the Ministry of Health and Social Welfare, while the Ministry of Food leads a cabinet level committee overseeing the implementation of a National Food Plan. Indonesia also has no overarching coordinating body, but there are several less comprehensive ones. Coordination for MCU is carried out by the Ministry of Planning (Social Development Bureau) together with the coordinating ministry of social welfare and the Nutrition Department of the Ministry of Health. In parallel there is a National Food Council linked to the President’s office that deals with getting rid of “hunger”, by improving national food security through the Ministry of Agriculture.

Workforce size, structure and organization

Workforce size, structure and organization vary considerably across the three countries. All three countries have a large contingent of volunteer workers who are the principal actors delivering nutrition actions at the community level, in addition to the doctors, nurses and midwives who are, or at least should be the principal actors delivering nutrition intervention in the health system. The presence of specific nutrition professionals in the health system varies considerably across the three countries, from virtually none in Nepal and Bangladesh to some 15 thousand in Indonesia. There are also many graduates in Indonesia and Bangladesh who are not being employed by the public system, and so presumably are active in the private sector.

There are 72,000 medical doctors and 220,000 nurses in Indonesia⁶⁴, albeit that the nurses have no professional certification or registration system in place, and the majority are only educated to high school level⁶⁵. Bangladesh was reported to have 33,000 registered doctors and just 18,000 registered nurses just over a decade ago⁶⁶, and is recognised to have a severe health worker shortage, as well as an inappropriate skill-mix and inequitable distribution⁶⁷. There are no specific midwifery posts per se, and nurses are registered as “nurse-midwife”. In Nepal there are some eight thousand medical doctors⁶⁸ together with some five thousand practicing nurses, and half as many

auxiliary nurse midwives, which ranks it near the bottom of countries in Asia in human resources according to WHO statistics. Like Bangladesh it struggles with inequitable distribution of its health workers with an estimated two thirds working in the urban centres of the Kathmandu valley or other cities. Retention of doctors in posts as well as absenteeism is a major concern in Nepal. A health facility survey by the MOHP showed only 64-80 per cent of assigned doctors were actually “on the job” or available during the time of the survey⁶⁹. While nurses had the same availability (68-81% in place), paramedics such as the Auxiliary Nurse Midwife showed the highest presence with 81-92% found on duty as assigned. . A similar situation now exists in Indonesia, where the system of compulsory service for doctors, nurses and midwives is no longer mandatory and health professionals are increasingly concentrated in urban areas where they can also have a private practice to augment their income^{70 71}.

It should be noted that many if not all of the USAID and World Bank supported projects across the three countries use NGO capacity rather than formal health system capacity to reach their short term objectives. There will need to be a concerted effort from all partners to support national government to sustain these projects once external funds have finished.

In all three countries there is no single chain of command from the national centre to the community level for supervision of those involved in managing and/or delivering nutrition interventions and outcomes. In all three countries there is a central unit that in theory is responsible for overseeing all of the nutrition actions carried out in the health system. These units are relatively small however and at a low level in the ministerial hierarchy. These limitations make it difficult to take on the important role of providing technical guidance on nutrition throughout the health sector, let alone providing leadership across other sectors. In Nepal for instance the Nutrition Division is at the third hierarchical level, inside the Department of Family Health. In Indonesia the Directorate of Community Nutrition is part of the Department of Public Health. In Bangladesh there is an Institute of Public Health Nutrition in the MOHSW which seems well situated, except that it has no subordinated officers at the lower levels of the system who will allow it to monitor how things are going and to provide any timely guidance.

Supervision of the various actors in the health centres is largely carried out by the referral centre staff at the level immediately above: i.e., health post staff are supervised by health centres, health centres by district hospital medical staff, and so on. In all three countries this supervision is done by staff members who either do not have nutrition training or who have not been trained in “modern” public health nutrition. Only in Indonesia are dedicated nutrition officers supposed to be in place at the local health centre and the district hospital level, but their role is seen to be more as doing nutrition interventions than managing the nutrition interventions that others are doing. Moreover, in 2010, only a third of health centres had nutritionists in place, and in many districts the nutrition position has been subsumed under another position such as Immunization

or Maternal and Child Health with responsibilities assigned other than nutrition.

In both Bangladesh and Nepal plans are already approved to create these district level positions, though their role is yet to be totally elucidated. At the moment the community level workers in Bangladesh are supervised and/or organized by NGO organizations. The District Nutrition managerial oversight function seems to be the critical one that needs creating and/or filling. In Indonesia there were 496 districts (regencies and municipalities) in 33 provinces. In Nepal there are 75 districts in 14 zones. Bangladesh has 64 districts in 7 zones.

Access to information systems

Access to information systems that relate to nutrition is relatively poor in all three countries, and where it exists is little used for decision making. In Nepal existing information systems seem to heavily favour central level decision making and include very little nutrition information. The Poverty Monitoring and Analysis System (PMAS), was introduced by the National Planning Commission in 2004 to coordinate, consolidate, harmonize and analyze data from existing poverty monitoring systems and to communicate results in ways that feed back into the policy process⁷². A recent analysis concluded that water and sanitation data, education data, parts of the agriculture/food security data, and parts of the health primary data of PMAS were insufficient to meet the monitoring and evaluation needs of the Multi-sectoral Nutrition Plan⁷³. The Annual Review of the Health Sector Programme held in January 2012 made a systematic assessment of the progress as compared with programme objectives. Of the twenty four indicators included only two were related to nutrition: the % of children under five who are underweight, and the % of diarrhoeal attacks that were treated with zinc; the underweight targets were considered to have been met. Until the planned National Nutrition Centre (NNC) is created it will be difficult to change this situation.

The situation concerning nutrition information systems is little different in Indonesia, where little or no nutrition information is used systematically for deciding on whether nutrition programmes are being implemented, be they at health centre, district or regional level. In Bangladesh things are getting better, with the nutrition surveillance system and the annual monitoring of the Country Implementation Plan also valuable sources of information, albeit not yet fully functioning. They have also had success in the inclusion of nutrition indicators in the HMIS, and the MYCNSIA project is supporting the piloting of a web-based nutrition system which will be taken up by the NNC.

The main sources of nutrition information have been national surveys and research, and indeed there is a plethora of these. But even these are not being used at local levels for decision making while at the national level an adequate forum for reviewing this information and making programme decisions still has to be developed.

Sector specific interventions

Sector specific interventions are remarkably similar across the three countries, especially with regard to the nutrition specific interventions. Of the LNS/SUN package of interventions, the focus is more on scaling up curative interventions in the first instance, or those that require least “managerial capacity” and support.

Micronutrient interventions (supplementation and fortification) are the most common, with all three countries demonstrating reasonably successful salt iodization programmes. All three also carry out periodic distribution of massive dose vitamin A capsules together with deworming of children aged one to five years of age. This distribution is typically carried out through Child Health Days held twice a year, (primarily to ensure that all children are vaccinated against polio and measles), that facilitate the achievement of high rates of coverage. All three countries also distribute iron and folic acid tablets to mothers during pregnancy. Although the coverage of these is often high in terms of distribution, the consumption rates are poor in both Bangladesh and Indonesia. In Nepal, the female community health volunteers have taken on the task of weekly home delivery of iron folic acid tablets to encourage mothers to take the supplements during pregnancy; the impact on consumption of tablets as well as reduction in maternal anaemia rates has been dramatic⁷⁴.

With regard to food supplementation, all three countries support the facility based and community based treatment of severe acute malnutrition using ready-to-use therapeutic food (RUTF), albeit restricted to a few areas where severe malnutrition rates are still high using externally procured RUTF. Very little is being done to improve maternal nutrition in any of the three countries, however, except perhaps in Bangladesh. The Bangladesh Integrated Nutrition Programme (BINP) provides food supplements during pregnancy to thin women (BMI<18.5) and although observational studies have shown an effect on birth weight⁷⁵, large scale evaluations showed no difference between BINP areas and non BINP areas⁷⁶. BINP covered around a quarter of the country in 2005 and is now being scaled up through the Health Sector-Wide Approach.

With regard to behaviour change for improved maternal, infant and young child feeding, none of the three countries appears to be delivering strong interventions with any high coverage level, be it in health facilities or out in the community. Very few if any health facilities are “Baby-Friendly” and the Code of Marketing Of Breast Milk Substitutes is hardly respected and enforced anywhere. There is also a lack of any policies or programmes related to overweight/obesity in any of the three countries.

The only country with a multi-sectoral nutrition plan that formally includes nutrition sensitive interventions is Nepal. The proposal is to scale up the nutrition sensitive interventions in a slow, step-by-step fashion. This is principally because of the very limited manpower available for carrying out these programmes. The proposal in the Agricultural Sector is to train Agricultural Extension Workers (AEW) to promote the production of nutrient rich foods by small women farmers both for their own

consumption as well as for sale to generate income. The numbers of AEW is very small, however, and creating the capacity to do this will require considerable time in each “model village” before being able to spread even further.

Also in Nepal an “alternate” multi-sectoral approach called “Suaahara” is being supported by USAID and developed by Save the Children and Helen Keller International (HKI) through the MoHP, in all Village Development Committees (VDCs) of 20 districts. Suaahara is attempting the following: 1) through the Health posts to extend outreach into the community in order to improve very specific IYCF behaviours; 2) through the Agricultural Service Centres and extension services to increase the production and consumption of micronutrient rich foods (i.e., plants and animals); 3) through the WASH sector to improve hand washing, water supply and home hygiene; 4) through Social Behaviour Change Communication (SBCC) to delay first births and increase birth spacing and improve the community perception of the nutrition problem. In order to do this, Save the Children and HKI are contracting local NGOs to do all the capacity building and SBCC.

Tertiary education institutions

Tertiary education institutions are potentially part of the organizational level because they afford the opportunity for students to carry out “practical internships” learning on the job how to practice what they learn in theory in the class room. There seems little evidence of this happening in any of the three countries, with the exception of the James P. Grant School of Public Health which offers an MPH program with a course in Public Health Nutrition. As a part of this course, for nutrition training, they are actively encouraging their graduates to go and work for at least 6 months in the districts “on the front line.” This is a part of the BRAC training – non-mandatory 6 months after graduation. As was noted in the report from Bangladesh, the Institute of Nutrition and Food Sciences at Dhaka University has graduated nutritionists from its programmes for a long period of time, though very few of them have found work in the government. It seems that most graduates go on to work with agencies, NGOs and within the food industry. The capacity of these institutions to provide official “in service” training in public health nutrition is unclear. In Indonesia, none of the nutrition graduates have carried out any officially accredited in-service training in the delivery of public health nutrition services. Nepal does not have a course of public health nutrition yet,, and is even struggling to establish public health courses.

System level

This level refers to the broader socio, cultural, economic and political “environment” that influences how nutrition capacity develops and has its operational effects, including legal frameworks and supporting policies. Of particular relevance to nutrition are the state commitments to various human rights instruments and especially the International Convention on Economic, Social and Cultural Rights (ICESCR) the Convention on the

Elimination of all forms of Discrimination Against Women (CEDAW), and the Convention of the Rights of the Child (CRC), and whether and how these are realized.

Legal frameworks

Legal frameworks are the most fundamental of system level capacity determinants. All three countries have ratified the three treaties (ESCR, CEDAW and CRC) with commitments ensuring their citizens Right to Health, Right to Social Security, Right to Employment, as well as the Right to Food. Translation of these international commitments into a national reality depends on how far these human rights principles are incorporated into national legislation, and the extent to which they can then be enforced. In all three countries the right to education, to a healthy environment and medical care, to the opportunity to work, and to social security are included in the constitution, the very basis of national legislation.

All three countries adopted the Millennium Declaration in 2000 and progress towards achieving the rights to health, employment and social security can be measured by a country's progress towards the Millennium Development Goals (MDGs). The first MDG, which is to eradicate extreme poverty and hunger, has three targets: a) to halve the proportion of people whose income is less than one dollar a day; b) to achieve full and productive employment and decent work for all, including women and young people; c) to halve the proportion of people who suffer from hunger. Hunger is measured as the prevalence of underweight children, as well as the proportion of the population below a minimum level of dietary energy consumption. In each country measures to achieve the MDGs have been included in National Poverty Reduction Strategy Papers (PRSPs) as well as medium and long term plans for national development, which provide the basis for annual government work plans and state budgets.

Sectoral policies

Sectoral policies in various Ministries are potentially involved in delivering services that ensure the MDG targets are met and rights to a healthy environment and medical care, to employment, and to social security are progressively realized. The responsibility to deliver nutrition specific interventions that can rapidly reduce stunting rates lies predominantly within the Ministry of Health. The nutrition sensitive interventions that can also contribute to stunting reduction and improve sustainability involve other Ministries, notably those of Agriculture, Social Security, Education and Infrastructure. For example, nutrition sensitive interventions like improved food security and poverty reduction involve the social security sector for cash transfers, and the agriculture sector for increased homestead food production to increase dietary diversity.

Given the rapid emergence of 'overnutrition' and of urbanization in most LMICs, consumed food is increasingly purchased as processed/packaged food. Thus the trade and investment sector is increasingly important, especially since liberalisation of food

trade and Foreign Direct Investment (FDI) in food manufacture/retail is driving the emergence of an obesogenic diet. An urgent role for the Trade (and other sectors) is to regulate this increasingly unhealthy food environment⁷⁷.

Both Indonesia and Bangladesh have national nutrition plans that largely rely on a single sector for the service delivery (i.e., the Ministries of Health or Ministry of Health and Social Welfare.) Only Nepal has a multi-sectoral nutrition plan that involves the Ministries of Health, Education, Agriculture, Water and Sanitation, Social Security and Local Government.

Decentralization

Decentralization is also a potentially important system level determinant of nutrition capacity. Since the mid-1980s, international financial institutions have pressured developing countries to adopt more decentralized systems of government⁷⁸. Whilst decentralization has great promise for improving delivery and accountability of public services, its realization depends on the design and governing institutional arrangements as well as management capacity. A key feature of success is political accountability at local government level, but even this cannot always ensure the maximum realization of benefits⁷⁹. The responsibility for the delivery of basic services such as health and education lies with local government at the district level in both Indonesia and Nepal. Indonesia decentralized such responsibility to District level just over a decade ago, and in Nepal it has been so for two decades. In Bangladesh, the responsibility for the delivery of such services is still more centralized. Both of these scenarios have different implications in terms of capacity building for initiating and scaling up nutrition actions. In the centralized system the action can be planned and implemented from the centre, but in the decentralized system there has to be a decentralized capacity to plan, implement and manage in each district, with developed guidelines defining standard operational criteria coming from the centre. For both scenarios the guidance for delivery of nutrition interventions requires well-planned monitoring and evaluation from the centre ensuring that standard operating procedures and professional standards of practice are being met.

Professional bodies

Professional bodies that can influence capacity at the system level are of two types: associations that look after the interests of a profession, and independent councils that look after the interests of the public by guaranteeing the competence of certified professionals. None of the three countries has an independent national institution or council that registers and certifies competency of nutrition professionals.

The roles of medical doctors, dentists and nurses are well established and thus their positions and salaries are routinely included in national health budgets; minimum standards are set as to ratios of professional to population. All three countries have medical councils that provide certification of doctors, and dentists and have a register of

such professionals that are practicing. There are also councils of nursing in Nepal and Bangladesh although not in Indonesia⁸⁰.

Very often the creation of employment positions and of a potential career path of a professional workforce, either in private sector or the civil service, is linked to the existence of a certified professional role and function. Bangladesh and Nepal have a Nutrition Society and Indonesia has a Food and Nutrition Society, but their purpose seems more related to promoting the development of the profession by holding conferences for on-going professional knowledge development, rather than to detailing needed job descriptions and creating employment opportunities. In Indonesia, four professional groups with nutrition as a strong part of their purported functions have associations, including a Nutritionists' Association, a Dieticians' Association, a Midwives' Association, and an association of Medical Doctors Specialized in Nutrition. All of these associations are concerned with establishing their profession and the Nutritionist Association provides its own professional accreditation.

For nutrition service delivery to improve and be sustained not only do the professional roles and competencies of a public health nutritionist need to be strengthened⁵⁵ but independent professional registration/certification processes need to be established in all three countries. In many countries at present, the graduate diploma or certificate is used for professional certification. The drawback is that degrees and certificates cannot be withdrawn and, as a result, provide accreditation for life, unlike licenses that must be renewed and can be revoked for poor performance.

Accreditation of academic institutions

Accreditation of academic institutions is a process that essentially lies with the Ministry of Education, and is instrumental in assuring the adequate curricula are in place, and that graduates are taught adequately. The World Bank is supporting such processes for health professionals in both Indonesia and Nepal, and has included nutritionists in Indonesia. The establishment of courses that train graduates in public health nutrition depends on there being a demand for such courses (i.e. job descriptions, and a career path for graduates), but also on a career path in academia for academics who assume responsibility for teaching public health nutrition courses.

Regional Nutrition Capacity

There does not seem to be any authoritative source of information concerning courses on nutrition globally or regionally. The website of the International Union of Nutritional Sciences (IUNS)² has no information in this regard, nor does the website of the World Public Health Nutrition Association³. A US website that claims to be the number one directory of graduate schools⁴ lists some 364 nutrition graduate courses, of which 330 are campus based and 30 are online. Of these courses 361 are Graduate courses (Bachelors and Masters level) and 101 are Doctorate courses. Of the campus graduate course the great majority are in the US and the UK with some in Canada and Denmark and few in Asia. But the courses vary in nature from food science to dietetics and community nutrition. Another source is the Arbor Guide⁵ which lists about 170 university colleges and departments in the USA that offer degree courses in nutrition, food science and dietetics, and also list by other continents. Again however the list is not just for nutrition but includes food science course as well. UNICEF also conducted a survey in 2009, when questionnaires were sent to over 300 individuals and institutions in the region, trying to map institutions with courses in nutrition. The survey identified 14 such institutions, many of which are described further below. The study found that most programs were in food science and technology and dietetics; some with a population focus were present (as mentioned above) in community nutrition. There were many courses labeled 'nutrition', but their content and emphasis was unclear since, as this was a mailed questionnaire and the definition of 'nutrition' was not specific to public nutrition, it was difficult to ascertain what type of 'nutrition' was being taught in each course. While many regional courses offer bachelors and masters level degrees in Public Health, there were none in public nutrition or public health nutrition.

The Menzies School of Health Research, as part of the UNICEF EAPRO assessment of regional nutrition capacity, was tasked with mapping capacity development institutions in the region. The exercise was not considered a research activity, but intended to identify gaps in a very wide geographical area (i.e., 30 countries across Asia and the Pacific). The exercise is on-going.

Their focus became the Pacific Island Countries (PICs) (because of the emphasis on the double burden of malnutrition: > 80% of adults are overweight in seven PICs, and the extent of malnutrition in indigenous populations in those countries). Pre-service training is only available in Fiji, with a focus on dietetics. Because of the extent and spread of the region, it was difficult to assess the current in-service training opportunities in the region. E learning, which might be relevant in other areas of the world, is limited by

² <http://www.iuns.org/links-to-nutrition-resources>

³ <http://wphna.org/>

⁴ <http://www.gradschools.com/search-programs/nutrition>

⁵ <http://www.arborcom.com/default.htm>

poor connectivity. In addition, staff (trained and un-trained) are often absent as they need to move out of the region for outside courses or degrees. Pre-service training opportunities outside of Fiji, are similar to those presented below. In-service training employs a ‘cascade’ approach, which, by the time it reaches community level workers, is of uncertain quality.

There are other regional institutions that offer training in nutrition. Some, like Mahidol University in Bangkok, are not listed in the US guides, but offer masters level programs in food science and toxicology, nutrition and dietetics, and a Master in Science and Doctorate of Philosophy in nutrition. In addition, the Institute offers a number of short courses (two to six weeks) particularly one in community nutrition program planning, management, implementation and evaluations. The new Masters in Public Health (Global Health) at the School of Global Studies at Thammasat University in Bangkok, will be offering a course in Public health nutrition in its 2013-14 curriculum, and is planning to expand its offering in this field in its revised and expanded curriculum over the next years. Though nowhere near the level of Mahidol, it has already graduated Masters Students with thesis and project research in Public health nutrition related subjects.

Indonesia is also the home to the Southeast Asian Ministers of Education, Tropical Medicine and Public Health Network (SEAMEO-TROPMED), Regional Centre for Community Nutrition affiliated with the University of Indonesia. SEAMEO offers Masters of Science as well as Doctoral degrees in Community Nutrition. It has been in operation since 1970, and identifies as its mission, “to carry out teaching, research and consultancy services in community nutrition at an international level quality.” In addition, it notes as its objectives “to train professionals throughout the region in planning, executing and evaluating nutrition policies and interventions,” and “to link and assist other nutritional training and research institutions within the region.” It is part of a network of regional centres in other disciplines, but offers connections throughout the Southeast Asian region.

There are a number of programs dedicated to nutrition in Australia, most of them clinically oriented towards nutrition science and dietetics. These would include degree programs in food science at University of Melbourne, Masters of Public Health at Menzies University, and Nutrition and dietetics at Monash University. Australia National University offers a PhD in Public Health Nutrition as well as courses in human nutrition and population health, however, it is difficult to find where the nutrition offerings are focused and as a result their commitment to public health nutrition is difficult to assess.

The University of Queensland offers a course in Community and Public Health Nutrition as part of its Nutrition Field of Study in the MPH program, where students can ‘gain an understanding of the theory and practice of community and public health nutrition.’ University of Queensland also offers masters courses that include students from various parts of Asia, and would offer an immediate resource for regional capacity

development.

Some others offer promise of being supportive of an initiative to develop public health nutrition capacity in South and Southeast Asia. Griffith University in south eastern region of Queensland, Australia offers a program in ‘Public Health Nutrition’, although its degree offerings are more traditional: Bachelor of Nutrition and Dietetics, Graduate Diploma of Nutrition, and a Master of Nutrition and Dietetics. The curriculum is focused on health sciences, advanced studies in human nutrition, with practicum placements in hospitals and other health facilities. Another Australian institution, Deakin University, with one of four campuses in Melbourne, offers a Graduate Certificate of Public Health Nutrition and promotes a ‘practically-oriented, postgraduate level introduction to public health nutrition covering material from related disciplines such as epidemiology, politics and policy, nutrition promotion and communication to provide you with core competencies to tackle these relevant public health and nutrition issues.’ The University of Sydney, offers a course in Public Health and Community Nutrition and promotes its program as covering “the principles of health promotion... how to plan, implement and evaluate nutrition promotion strategies...the scope and distribution of chronic diseases and the role of nutrition in the aetiology of diseases such as cancer, heart disease, diabetes and obesity is examined. This unit of study also investigates the food habits of culturally and linguistically diverse groups...and the current nutrition policies and guidelines aimed at preventing chronic diseases.”

These institutions are in addition to the tertiary academic centres in Bangladesh mentioned above: the Institute of Nutrition and Food Sciences at Dhaka University, which has graduated numerous nutritionists from its programmes; and the James P. Grant School of Public Health, BRAC University, which offers an MPH program with a course in Public Health Nutrition.

Conclusions

It is clear from the assessment in all three countries that a significant number of health, educational, and agricultural personnel from different administrative and programmatic levels will need training in public health nutrition. This is not to say that nutrition of some form is not being taught in these countries. It is, in many cases, and the topic of malnutrition (usually undernutrition, but increasingly overnutrition) is being accepted as an important challenge by national governments for national as well as individual development. However, what is being taught is often clinical or individual based nutrition and often the emphasis is more on learning how to do research than on managing nutrition programmes. As such they may not be appropriate to solve the population based problems in nutrition that these countries face. This may become one of the greatest challenges in promoting capacity development in each of these countries.

Many of the important approaches of population based nutrition have been developed

in the last few decades and often, because of their different orientation and multi-sectoral basis, may not be recognized by those trained in the more traditional clinical sphere of human nutrition, food science, or dietetics. There is no doubt that these latter are nutritionists, but changing their professional orientation may prove more challenging than offering new training to new professionals and staff. As the recommendations will show, the first task is to make sure that all staff – nutrition, health, agricultural, education, and so on – are talking about the same necessary capacities and competencies when they discuss ‘nutrition.’ This problem is evident when discussing such wide-ranging topics as institutional curricula in Bachelor’s and Master’s programs in Nutrition or job descriptions of field staff presently or to be assigned to ‘nutrition’ as a part of their responsibility. To change mind-set and practice will require a concerted effort at all levels of government and society.

Changes of this magnitude and complexity cannot be accomplished at the same time. There will be different time horizons that define short term, medium term and long term interventions; each to be started simultaneously even if their impact may not be felt for many years. Immediate (short term) interventions can start at the community level with in-service training, adding new information and skills to those already existing in that work force. The content is largely set out in the *Lancet* Nutrition Series and is part of the SUN framework: evidence-based interventions with known impact on undernutrition, that can be implemented in health facilities in the first instance and then reach out through community based nutrition programmes to achieve high coverage and intensity of programme interventions.

Unfortunately, at the level where the most immediate change can be realized, the numbers tend to be the largest. In planning how to reach this group, the weakness in the next tier (i.e., trainers and supervisors) is stark. And, subsequently, in developing in-service training methods and courses for this group, the weakness at the next level up (i.e., senior staff competent and conversant in Public health nutrition) also becomes evident, and so on. Nor is this entirely a linear and strictly hierarchical process. There are additional resources that exist in other sectors with equal access and credibility in the community that should be involved and trained in this process as well. For this reason, the various consultant teams concluded that the best approach would be to work within a limited number of self-contained units where all aspects of the system could be developed, including monitoring systems where appropriate nutrition indicators could be developed and measured with results used for local decision making. The most logical unit for developing such an initial intervention from an administrative perspective is the District level.

At the District, it will require a higher level of training if a District Public health Nutrition Officer is to be in place capable of providing supervision and on-going education to workers reaching out to communities to monitor and implement programs in public health nutrition. To train a cadre of these Public Health Nutrition Officers, however, will require programs that offer at least Bachelor’s and preferably Masters

level studies in public health nutrition, either as an added area of interest in an on-going MPH program (for example) or as an additional degree: a Masters in Public Health Nutrition. This is obviously unrealistic, especially given the time and resource constraints, and an alternative approach is needed in the short term.

Although none of the Country Assessments made any estimates of the numbers of people that would need to be trained, it should be possible to derive estimates based on the number of districts that would be covered in the short term. The total number of districts in the three countries is 636, but none of the countries aims to take the full package of nutrition sensitive and nutrition specific interventions to scale immediately. Training all nurses/midwives/doctors and community workers to deliver the Essential Nutrition Actions for example, could well be done in a large number of districts, and the use of NGOs to do this is one way of circumventing the lack of nutrition professionals to achieve this. But creating the district level managerial capacity to provide on-going supportive supervision after the training of peripheral workers will necessarily be created in just a few districts to begin with. In Indonesia this could be in three provinces with 45 districts for example, of which the district level management model could be developed in ~20 to begin with. In Bangladesh the idea is to begin in six zones (without specific details of which ones or where, etc.) but it will amount to approximately 15 districts. In Nepal, the health component of the MSNP is going rapidly to scale, with all 75 districts to be covered in the first five years, but to develop the district capacity to manage this might only be done in the six districts chosen to initiate the fully integrated MNSP. This would total 41 districts, each needing a District Public Health Nutrition Officer now, which means not waiting for staff to be sent to centres of training in the region to get the qualifications needed and be back on the job 2-3 years from now.

These 41 district nutrition officers are just from these three countries, and presumably there would be others coming from the rest of the SUN countries in the region; the numbers are likely to be far greater.

It would not be necessary to wait for the training of the District Public Health Nutrition Officer to begin in-service training of community level workers, however. There are successful examples of NGOs working at this level that could provide this training and capacity in a 'pre-packaged' way that could help bridge the gap between no capacity and internal capacity in public health nutrition. This may require a concerted and innovative approach in standardizing content and competencies expected in the training provided by NGOs, while not interfering with or inhibiting their independence in solving local problems and creating local networks. A national NGO nutrition network may be a worthy goal in this process.

Given that each of these countries already struggles with vacancies in their workforce, particularly at the professional level, it is unrealistic to think that a newly defined cadre with a separate job description can be put in place and retained in more than a few specifically identified centres, most likely at the District Level. And if the numbers of these professionals (Masters level graduates in health, agriculture, education, or

environmental studies) is relatively low to begin with, it is also unrealistic and unnecessary to develop new academic institutions, departments, or even programs until much later, when the indigenous trained manpower exists to staff them on a financially and academically sustainable manner. There will clearly be a significant time lag while this capacity is being developed. For this reason, we surveyed the institutions in the three countries that we felt offered programmes already in existence and functioning well, which could be enlisted immediately for capacity development, or upgraded to suit the needs of training nutrition staff on a regional basis. These institutions could either provide the training off-site, or, in cooperation with respective governments and the academic establishment of each country, could offer adjunct training in existing departments. There are also on-line and/or distance learning programs that could offer interim training courses for District level officials, medical officers, and midwives. Such on the job distance learning course have been developed at Mahidol University with World Bank support for example, and could be considered for expansion. However, if outsourcing to regional training centres is chosen, the cost of either short courses or diploma and other degree courses should be included in national budgets, but requests to the donor community to support scholarships should be anticipated during this transitional period.

Whether and to what extent there will be sufficient capacity created for the national government to take over these projects and be able to maintain them once external funds are finished is unsure but likely to be something that will require a concerted effort from all of the partners involved.

The approach of targeting a limited number of districts with an all-systems approach that could lead to accelerated stunting reduction through community based improvement at scale for a few outcomes (e.g., maternal and women's anaemia, LBW and IYCF) forms the core of a short-term approach; expectation would be for some results within 2-5 years of onset. However, as mentioned in each of the country reports, individual human resource and workforce development are not the only component of capacity development, and would not represent the only elements introduced. Organizationally, in each of the countries there is a need to match national capacity development to the Districts. This will require working within Academia and other training institutions, with Government Ministries and departments, with the NGO community as mentioned above, and with donors and other stakeholders. There will need to be, eventually, jobs created and academic paths defined that will motivate young professionals to enter the field of Public health nutrition. There are examples of medium term interventions. For these to be realized, it will take more than 5 years.

Finally, from a systems perspective, despite strong government commitments to improve the nutrition status of women and children, there are gaps in specific policies directed at public health nutrition. For these policies to be developed, legislated and monitored for implementation across more than one sector, there will be a need for new government structures that bridge the traditional vertical approach to problems.

Advocacy and training is needed which can be aimed at ministers and policymakers in other sectors on how their contribution to better nutrition (under and over) can be optimised. Nepal has demonstrated a model in its creation of a multi-sectoral national nutrition steering committee that reports to the National planning commission or directly to the Prime Minister's office. In the decentralized context of Indonesia there is an urgent need for multi-sectoral guidance and norms to establish for district nutrition planning, as well as sectoral protocols to be established that will allow management systems to be established.

Regional Recommendations

Regional recommendations are separate from and do not duplicate the recommendations made for each of the individual countries. They are the result of an analysis of trends common to the countries surveyed and are intended to guide all regional stakeholders, including UNICEF, though it may not be the lead agency for all.

Short Term recommendations:

1. **Work with country level staff in each country to identify suitable districts for full implementation of public health nutrition inputs required for short term improvements in all six of the WHA nutrition objectives, including stunting, maternal anaemia, low birth weight and IYCF targets.** This would include:
 - a. Assessing available curricula and on-going training plans.
 - b. Developing curricula and training plans for in-service training in public health nutrition of community level workers.
 - c. Examining existing HMIS systems for ways to include nutrition-specific and nutrition-sensitive indicators for use in local decision making.
 - d. Working with partners in other sectoral agencies to review and revise job descriptions initially in Health (i.e., short term) at community level, and subsequently (i.e., medium term) at higher levels across sectors.
 - e. Assisting country offices to develop capacity development programs linked to other sectors, e.g., agriculture, education, water and sanitation, protection, etc. This to include advocacy and training aimed at ministers and policymakers in other sectors on how their contribution to better nutrition (under and over) can be optimised.
 - f. Establishing multi-sectoral steering committees at national level to oversee and support these District initiatives with sufficiently senior leadership to be able to scale-up or expand to other districts over time.

2. **Provide *transitional* public health nutrition capacity support for capacity**

development to each country and District. This would include, to:

- a. Identify a roster and work with Regional academic institutions to develop a master plan for capacity development of District Level Public health nutrition officers; subsequently apply this plan for training those officers in the programme-based area.
- b. Work with National and International NGOs along with other development partners to develop a National Nutrition Network that would standardise training curricula, and monitor indicators across many and multi-sectoral organizations.
- c. Develop an inter-institutional working group (WPHNA could provide support) that will standardize curricula and competencies, and define a means of assessing the quality of training.
- d. Support the development of regional distance learning for District Public Health Nutrition Officers, linked to two weeks of face-to-face contact with their academic support in nutrition once every six months

Medium Term Recommendations

1. **Begin process of Academic capacity development.** Do this by:
 - a. Strengthening collaboration both intra- and inter-nationally especially with institutions that have developed Public Nutrition curricula and distance-education expertise.
 - b. Using models from other academic disciplines to develop academic career paths in public health nutrition
 - c. Supporting institutions in developing multi-sectoral research as well as interventions in improving public health nutrition (e.g., research in double burden, women's health before pregnancy, social transfers and nutrition, urban agriculture, etc.)
 - d. Sponsoring in-country and regional conferences on multi-sectoral approaches to public health nutrition problems of significance.
2. **Develop sustainable public health nutrition capacity in country** (short- to medium-term). Do this by:
 - a. In the short-term, identifying a significant group of Nutrition Officers and MO (public health and nutrition) from each country to participate in graduate certificate programmes (3 mo) in institutions that can offer programmes to develop public health nutrition skills.
 - b. In the medium-term, identifying a smaller group (4-5) of promising junior professionals for enrolment in selected Masters in Public Health Nutrition courses, preferably in the region; on a case-by-case basis, exploring scholarships from donors invested in public nutrition.
 - c. Working with selected academic institutions that are developing methods

for ‘hybrid’ distance learning courses; experimenting and evaluating a trial initiative of such “on the job” distance learning in selected regional countries.

- d. Working with countries’ ministries of health and education as appropriate to develop *professional associations* that can advocate for public health nutrition staff, and *professional councils* that can provide professional certification of public health nutritionists, and *accreditation bodies* that can accredit academic programs.
- e. Using regional networks (e.g., institutional working group, SEAMEO), establish a robust monitoring and evaluation strategy.

Long term recommendations

1. **Focus on nutrition sensitive interventions that will profoundly affect reduction in malnutrition in women and children in a sustainable way.** These would include:
 - a. Working with Ministries of Education (and through them with communities) to improve entrance and retention of girls in mid- and higher secondary education
 - b. Focusing on reducing teenage pregnancies through improved Adolescent Reproductive and Sexual Health programs in country that include better access to education and contraceptives
 - c. Working with Ministries of Environment, Water and Sanitation to improve environmental and personal hygiene particularly among children.
 - d. Beginning to plan responses to prevent overnutrition.
 - e. Examining culturally appropriate ways to improve the health and nutrition of pre-pregnant women.
 - f. Exploring the development of cash transfer programs that would support women and children in their choices of diet and use of institutions.
2. **At policy level, starting at the same time as short term interventions, begin the process of developing nutrition appropriate policies and legislation.** This could include
 - a. Policies to strengthen the Code of Marketing of Breastmilk Substitutes
 - b. Policies that restrict the importation of processed foods.
 - c. Policies that protect the poor from the effects of food price increases.
3. **Develop regional networks for future support to other Asian countries**
 - a. Identify liaisons within ASEAN for integration of improved public nutrition as an objective of the upcoming ASEAN Economic Community.
 - b. Work with other Regional networks (e.g., SEAMEO TROPMED) to develop standardized approaches to public nutrition capacity development that can be modified according to individual country situations.

Annex 1: Team Members

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