Are Data Available for Tracking Progress on Nutrition Policies, Programs, and Outcomes in Bhutan?

Data DENT
Data for Decisions to Expand Nutrition Transformation

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Abbreviations

ANAP	Accelerated Nutrition Action Plan
ANC	Antenatal Care
ARI	Acute Respiratory Infection
BCC	Behavior Change Communication
BENAP	Bhutan Every Newborn Action Plan
BFHI	Baby-Friendly Hospital Initiative
BMI	Body Mass Index
BMS	Breast Milk Substitute
DHIS	District Health Information System
ECCD	Early Childhood Care and Development
eLENA	e-Library of Evidence For Nutrition Actions
ePIS	Electronic Patient Information System
EWEC	Every Woman Every Child
FAB	Fertility Awareness-Based
FNSP	Food and Nutrition Security Policy
GNMF	Global Nutrition Monitoring Framework
GNR	Global Nutrition Report
HAZ	Height-For-Age Z-Score
IDDCP	Iodine Deficiency Disorders Control Program
IEC	Information, Education and Communication
IFA	Iron and Folic Acid
IFPRI	International Food Policy Research Institute
IMCI	Integrated Management of Childhood Illness
IYCF	infant and young child feeding
KMC	Kangaroo Mother Care
LARC	Long-Acting Reversible Contraceptives
MAM	moderate acute malnutrition
MICS	Multiple Indicator Cluster Survey
MNP	Micronutrient Powder
NCD	Noncommunicable Disease
NFE	Nonformal Education
NFNSS	National Food and Nutrition Security Strategy
NIP	National Immunization Policy

NNS	National Nutrition Survey
NRHS	National Reproductive Health Strategy
NSNCDRF	National Survey for Noncommunicable Disease Risk Factor
ORS	Oral Rehydration Salts
PNC	Postnatal Care
RMNH	Reproductive, Maternal, Newborn, Health
ROSA	Regional Office for South Asia
SAM	severe acute malnutrition
SARC	Short-Acting Reversible Contraceptives
SDG	Sustainable Development Goal
TT	Tetanus Toxoid
UNICEF	United Nations Children's Fund
WAZ	Weight-for-Age Z-Score
WHA	World Health Assembly
WHO	World Health Organization
WHZ	Weight-for-Height Z-Score

Executive Summary

The World Health Organization (WHO) and other global nutrition and health agencies recommend nutrition actions throughout the life-course in order to address malnutrition in all its forms. In this report, we examined how Bhutan's nutrition policies and programs addressed recommended nutrition actions, determinants, and outcomes. We reviewed population-based surveys to assess the availability of data on nutrition actions, nutrition outcomes, and the determinants of these outcomes; we also assessed the data availability in administrative data systems for selected nutrition actions and outcomes.

Our policy review identified a total of 53 recommended nutrition actions; of which, 48 were applicable in Bhutan; of those, Bhutan's nutrition policies addressed 46 and programs addressed 41. Nutrition actions that were not included in current policies and programs were: iron and folic acid (IFA) supplementation and deworming during preconception, food supplementation for malnourished lactating women, and IFA supplementation during early childhood. Policies addressed four actions for which there were no programs to implement it: daily IFA supplementation and deworming during preconception, advice about weight gain after weighing during pregnancy, outpatient management of severe acute malnutrition (SAM) and management of moderate acute malnutrition (MAM) during early childhood. National strategies and plans recognized and aimed to address all key determinants of nutrition except coverage under social protection schemes. National strategies and plans showed an intention to track progress of all other nutrition outcome indicators except underweight among non-pregnant women 15 to 49 years, overweight among school children and adolescents five to 19 years, and hypertension among adults.

Of 41 actions that Bhutan's policies and programs addressed, our data review found that population-based surveys contained data on only 17 actions; similarly, out of 15 actions we reviewed in the administrative data systems, data was available on seven actions. Data was not available from population-based surveys on a number of indicators, including those related to IFA supplementation, deworming, and food supplementation during adolescence; calcium supplementation, deworming, weight monitoring, and counseling during pregnancy; newborn care during delivery and the postnatal period; and infant and young child feeding (IYCF), growth monitoring, immunization, identification and management of SAM and MAM during early childhood. Population-based surveys contained data on 18 of 20 indicators on immediate and underlying determinants. Data on dietary diversity among pregnant women and on coverage of households under social protection schemes were not available in either the administrative data systems or the population-based surveys. The population-based surveys contained data on all nutrition outcomes except overweight among adolescents.

In conclusion, Bhutan's policy landscape for nutrition is robust. The gaps in availability of data for tracking progress on nutrition are large, however, and much greater than are the gap in policies and programs for addressing recommended actions. Future population-based surveys and modifications of other data systems should aim to fill the identified data gaps for nutrition action and outcome indicators.

1 Introduction

The World Health Organization (WHO) and other global nutrition and health agencies recommend nutrition actions throughout the life-course to address malnutrition in all its forms. It is anticipated that if evidence-based nutrition actions are implemented, supportive policies and legislation are introduced, and functioning health, education, and social protection systems established, then countries will be able to improve the nutrition and health status of their women and children, from which economic development and increased equity will inevitably follow (Nguyen et al. 2020).

As global recommendations are updated based on available evidence, it is anticipated that national governments and partners will, in turn, build on these recommendations to update national policies and programs. In addition, as countries develop national and subnational nutrition strategies and align policies and programs to these strategies, it will be critical to efficiently track progress on the roll-out of nutrition actions. Alongside the tracking of progress on nutrition actions, countries must also know whether programs are on track to help achieve change in key determinants of nutrition status and, ultimately, in nutrition outcomes. Little is known in the South Asia region, however, about either policy coherence or about the alignment of domestic interventions, determinants, and outcomes with globally recommended strategies. Even less is known about how well countries are able to track their progress on the success of interventions, the clear establishing of determinants, and the achievement of the outcomes that they have adopted in the context of building their national nutrition strategies.

To address this gap, the International Food Policy Research Institute's (IFPRI) South Asia Office, in collaboration with the UNICEF Regional Office for South Asia (ROSA) and others, examined the alignment of national nutrition policies and programs with recommended global nutrition actions, and then assessed the availability of national data for tracking progress on nutrition. We have compiled an overview of nutrition policies, programs, and data information systems for tracking nutrition actions, determinants, and outcomes in all the countries in the South Asia region, including Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. This report presents findings for Bhutan.

It has two major objectives:

1) To assess the extent to which Bhutan's policies and programs, a) address the recommended nutrition actions across the life-course; b) recognize both immediate and underlying determinants of nutrition; c) aim to tackle the key relevant nutrition outcomes; and

2) To examine the availability of data for tracking progress on nutrition actions, determinants, and outcomes in Bhutan.

Review findings are intended to provide an evidence base that will further support national governments and their partners in identifying gaps in nutrition actions and in improving data availability so as to better track progress on nutrition actions, determinants, and outcomes.

2 Approach

The approach and methods used for the policy review and for the data-availability review are described below. The review focuses primarily on the critical period from adolescence to early childhood, but, where relevant, we also include information pertaining to noncommunicable disease (NCD) outcomes that have been part of national strategies.

2.1 Methods: Policy Review

The policy review required three steps: first, to create a base framework of nutrition actions, determinants, and outcomes; second, to assemble national nutrition policies, strategies, and implementation guides; and third, to synthesize information on nutrition actions, determinants, and outcomes against the base framework.

2.1.1 Identification of nutrition actions, determinants, and outcomes

Global guidance documents recommend several nutrition actions throughout the life-course, that is, in adolescence and preconception, during pregnancy, around delivery, postnatally, and in early childhood. We identified a long list of recommended evidence-based nutrition actions from various sources (Box 1).

Box 1. Sources of recommended evidence-based nutrition actions

- *Essential Nutrition Actions: Mainstreaming Nutrition Through the Life-Course* (WHO 2019)
- *Guideline: Implementing Effective Actions for Improving Adolescent Nutrition* (WHO 2018)
- *Recommendations on Antenatal Care for a Positive Pregnancy Experience* (WHO 2016)
- *WHO Recommendations on Health Promotion Interventions for Maternal and Newborn Health 2015* (WHO 2015)
- *WHO Recommendation on Postnatal Care of the Mother and Newborn* (WHO 2013)
- *Making Pregnancy Safer: The Critical Role of the Skilled Attendant. A Joint Statement by WHO, ICM and FIGO* (WHO 2004)
- "Measuring the Coverage of Nutrition Interventions Along the Continuum of Care: Time to Act at Scale." (Gillespie et al. 2019)
- *The Global Strategy for Women's, Children's and Adolescents' Health 2016–2020* (Every Woman Every Child [EWEC] 2016)
- "Evidence-Based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?" (Bhutta et al. 2013)

Appendix 1 presents a full list of the identified nutrition actions by life-course. This list formed the frame of reference for the review of policies and programs.

To identify whether current policies and plans recognize and address immediate and underlying determinants of nutrition, we used the conceptual framework laid out under the following:

- "Strategy for Improved Nutrition of Children and Women in Developing Countries" (UNICEF 1991), and
- "Maternal and Child Undernutrition and Overweight in Low-Income and Middle-Income Countries" (Black et al. 2008).

Finally, the reference list of nutrition outcome indicators came from nutrition targets under the Sustainable Development Goals (SDGs) and from additional targets that were included in the WHO's Global Nutrition Monitoring Framework (GNMF) (WHO 2017). To ensure country specificity, we also included additional nutrition outcomes that were stated in the country strategies; some of these were not included in either the SDG or GNMF list of targets.

2.1.2 *Nutrition policy and program documents*

We identified the government-issued nutrition-relevant policies, strategic plans, program implementation and operational guidelines (as of May 31, 2020). We accessed these documents through online searches, UNICEF regional and country offices, and key informants working in the region. Our final list of documents for Bhutan included six nutrition-relevant national policies/plans/strategies and three program documents, as well as program implementation guidelines currently in use (Box 2).

Box 2. List of documents reviewed

Policy/plan/strategy

- *Infant and Young Child Feeding Practice Policy of Bhutan*, 2015—*Draft* (Bhutan, Ministry of Health 2015)
- *Strategy for Control of Iron Deficiency in Bhutan (Final Draft)* (Bhutan, Ministry of Health 2018)
- *National Reproductive Health Strategy of Bhutan (2018–2023)* (Bhutan, Department of Public Health 2018)
- *Bhutan Every Newborn Action Plan (BENAP) (2016–2023)* (Bhutan, Department of Public Health, UNICEF, and WHO 2016)
- *Food and Nutrition Security Policy of the Kingdom of Bhutan, 2014* (Bhutan, Royal Government of Bhutan 2014)
- *National Food and Nutrition Security Strategy (NFNSS) (2016–2025) and Action Plan (2016–2018)* (Bhutan, Royal Government of Bhutan 2016)

Program document/program implementation guideline

- *Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019)

- *EPI Services Manual for Health Workers* (Bhutan, Department of Public Health 2014)
- *Accelerating Actions for Reducing Under Nutrition and Micronutrient Deficiencies Among Women and Children* (Bhutan, National Nutrition Task Force, n.d.)

2.1.3 Synthesis of information

Among the nutrition actions that global guidance documents recommend, we first identified those that are applicable in Bhutan.[1] We developed a spreadsheet on which to enter the information for each recommended and applicable nutrition action (policy name, year published, policy recommendations, program guideline name). We then reviewed Bhutan's policies and programs to determine whether the recommended and applicable nutrition actions were being directly or indirectly addressed by the policies. If a nutrition action was addressed by a policy, we reviewed program implementation and operational guidelines to assess implementation status, recommendations, and geographic reach.

We assessed whether policies and strategies recognized the immediate and underlying determinants of nutrition and what activities were aimed at addressing these determinants; we did not, however, assess the overall adequacy of the activities aimed at addressing these determinants.

Finally, we reviewed policies and plans to examine which nutrition outcomes were targeted. In addition to examining which global nutrition outcomes were targeted in the national plans, we also assessed whether country-specific nutrition outcomes were present as key policy targets.

Two IFPRI researchers reviewed the national policy and program documents and their mapping to the framework of actions, determinants, and outcomes; the resulting spreadsheet was cross-checked by staff at UNICEF regional and country offices.

2.2 Methods: Data Availability

For each of the nutrition actions, determinants, and outcomes in the framework described above, we assessed the availability of data for tracking progress both in population-based surveys and administrative data systems. To assess data availability in population-based surveys, we reviewed the questionnaires used in the National Nutrition Survey (NNS) 2015 (Bhutan, Department of Public Health 2015), the Multiple Indicator Cluster Survey (MICS) 2010 (Bhutan, National Statistics Bureau, UNICEF and UNFPA 2011) and the National Survey for Noncommunicable Disease Risk Factors (NSNCDRF) and Mental Health using WHO STEPS approach in Bhutan 2014 (WHO, Regional Office for South-East Asia 2014).

We assessed the data availability in administrative sources on 15 high-impact nutrition actions identified in the *Lancet* framework (Black et al. 2013) and in *Essential Nutrition*

[1] Some recommended nutrition actions are only applicable based on settings; for example, IFA supplementation for adolescents is only applicable if the anemia prevalence among women of reproductive age is more than 20 percent. Appendix 1 provides related details.

Actions: Mainstreaming Nutrition Through the Life-Course (WHO 2019). The data availability in District Health Information System 2 (DHIS 2), Electronic Patient Information System (ePIS) was reviewed and qualitatively assessed through an in-country consultative process coordinated by the UNICEF Country Office Nutrition Information System (NIS) focal points.

3 Findings: Overview of Policies and Programs in Bhutan

In this section, we address 1) the extent to which policies and programs address recommended nutrition actions across the life-course; 2) the key determinants of malnutrition that are targeted in Bhutan's policies; and 3) the key nutrition outcomes that are targeted in Bhutan's policies.

3.1 To What Extent Do Policies and Programs Address Recommended Nutrition Actions?

Global guidance documents recommend a total of 53 nutrition actions through the life-course; of these, 48 nutrition actions were applicable in Bhutan (Table 1).[2] Policies addressed 46 of these actions and programs addressed 41. Both policy and programs addressed three of three nutrition actions for adolescence; policies addressed three of three actions and programs addressed only one of three actions for preconception; policies addressed 15 of 15 actions and programs addressed 14 of 15 actions for pregnant women; policies addressed 12 of 12 actions for women during delivery and in the postnatal period and programs addressed 11 of 12; policies addressed 14 of 15 actions targeting early childhood, while programs addressed only 12 of 15. Appendix 1 provides details on the recommended nutrition actions that are addressed by policies and programs and Appendix 2 provides details on program implementation.

Bhutan's nutrition policies and programs did not address IFA supplementation and deworming during preconception; they also did not address, food supplementation for malnourished lactating women during delivery and in the postnatal period, or IFA supplementation during early childhood. Policies addressed four actions for which there were no programs to implement it: daily IFA supplementation and deworming during preconception, advice about weight after weighing during pregnancy, outpatient management of SAM and management MAM during early childhood.

[2] In Bhutan, iodine supplementation, energy and protein dietary supplementation during pregnancy, and food supplementation for complementary feeding are not applicable, nor are vitamin A supplementation and micronutrient powder supplementation during pregnancy. Extreme poverty is very low in the country and hunger is not considered to be an issue.

Table 1. Nutrition actions addressed and not addressed by policies and programs in Bhutan, by life-course

Life-course	Nutrition actions	
	Addressed in national policies and programs	Not addressed in national policies and/or programs
Adolescence	• Daily or intermittent iron and folic acid (IFA) supplementation • Preventive deworming • Food supplementation*	
Preconception	• Contraception	• Daily or intermittent IFA supplementation • Preventive deworming
Pregnancy	• Antenatal care (ANC) screening by a trained provider • ANC screening by any trained providers during first trimester • Four or more ANC visits • Daily or intermittent IFA supplementation • Calcium supplementation • Preventive deworming • Tetanus toxoid vaccination • Nutritional counseling on healthy diet • Weight monitoring • Advice on consuming calcium • Advice on consuming IFA • Advice on consuming additional food • Advice on birth preparedness • Advice on exclusive breastfeeding	• Advice about weight after weighing**
Delivery and postnatal period	• Institutional birth • Skilled birth attendant • Optimal timing (delayed) of umbilical cord clamping • Assessment of birth weight • Support for early breastfeeding and immediate skin-to-skin contact • Optimal feeding of low-birth-weight infants • Counseling of mothers of low-birth-weight infants on Kangaroo Mother Care (KMC) • Postnatal care (PNC) for babies around day three, day seven, and within six weeks after birth • PNC for women within three and seven days and within six weeks after delivery • Breastfeeding counseling • IFA supplementation	• Food supplementation for malnourished lactating women

Life-course	Nutrition actions	
	Addressed in national policies and programs	Not addressed in national policies and/or programs
Early Childhood	• Breastfeeding counseling • Counseling on appropriate complementary feeding • Iron-containing micronutrient powder (MNP)*** • Zinc supplementation during diarrhea • Oral rehydration salts (ORS) during diarrhea • Vitamin A supplementation • Preventive deworming • Growth monitoring (weight assessment) • Counseling on nutritional status • Identification of severe or moderate underweight • Inpatient management of severe acute malnutrition (SAM) • Immunization	• Daily IFA supplementation • Outpatient management of SAM • Management of moderate acute malnutrition (MAM)

Source: Review of policies and programs (see Appendix 1 for details)

Note: * = targeted in some schools under school feeding program; ** = not available in any guidelines we reviewed; *** = available in 18 of 20 districts

3.2 Which Key Determinants of Malnutrition Are Targeted in Strategies?

We reviewed two strategy documents: 1) *National Food and Nutrition Security Strategy (NFNSS) 2016–2025 and Action Plan (2016–2018)* (Bhutan, Royal Government of Bhutan 2014), and 2) *National Reproductive Health Strategy of Bhutan (NRHS) (2018–2023)* (Bhutan, Department of Public Health 2018). Both documents recognized and included activities to address both the immediate and underlying determinants of undernutrition. Immediate determinants included inadequate nutrient intake by children, breastfeeding and/or complementary feeding, infectious diseases, and inadequate nutrient intake by mothers; underlying determinants that were included were women's education, their appropriate age of marriage and childbirth, sanitation and hygiene, and food security. Coverage by social protection schemes was not addressed in national strategies (Table 2). Appendix 3 provides details on activities included in the strategies.

Table 2. Immediate and underlying determinants recognized and addressed in national strategies

Potential indicators	Recognized and addressed
Immediate determinants	
1. Inadequate nutrient intake by children	
Breastfeeding	
Early initiation of breastfeeding	✓
Exclusive breastfeeding	✓
Continued breastfeeding	✓
Complementary feeding	
Timely introduction of complementary feeding	✓
Minimum dietary diversity	✓
Minimum meal frequency	✓
Minimum acceptable diet	✓
2. Infectious diseases	
Diarrhea	✓
Acute respiratory infection (ARI)	✓
3. Inadequate nutrient intake by mothers	✓
Underlying determinants	
1. Women's status	
Completion of high school	✓
Early marriage	✓
Early childbirth	✓
2. Sanitation and hygiene	
Use of improved sanitation facilities	✓
Safe water, handwashing	✓
Safe disposal of faeces	✓
3. Food security	✓
4. Socio-economic conditions	
Covered by social protection schemes	✗

✓=Addressed; ✗=Not addressed

Source: *NFNSS 2016–2025* (Bhutan, Royal Government of Bhutan 2016); N*RHS 2018–2023* (Bhutan, Department of Public Health 2018)

3.3 Which Nutrition Outcomes Are Targeted by Bhutan's Strategies?

In order to determine which nutrition outcomes were targeted by Bhutan's strategies, we reviewed the NFNSS 2016–2025 and Action Plan (2016–2018). These strategies aimed to have an impact on all nutrition-related outcomes, including low birth weight, stunting, wasting, childhood overweight, anemia among children and women of reproductive age, and overweight among men and women (Table 3). Bhutan is also a signatory to the nutrition-related Sustainable Development Goals (SDGs), which include targets for reducing overweight and NCDs. Bhutan's nutrition policies/plans did not address GNMF (WHO 2017) outcome indicators: underweight among women of reproductive age 15 to 49 years, and overweight among school-age children and adolescents five to 19 years.

National strategies also intended to track the progress of underweight among children under five years, anemia among adolescents 11 to 19 years and children six to 59 months, overweight among women and men, and diabetes among adults. Strategies did not show an intent to track the progress of underweight among non-pregnant women 15 to 49 years and overweight among school children and adolescents five to 19 years. Except hypertension among adults, national strategies included all NCD–related indicators that are part of the SDGs (Table 3).

Country-specific nutrition targets included in Bhutan's national policies include anemia among children six to 59 months.

Table 3. Nutrition outcomes on which Bhutan's strategies are focused

Nutrition outcomes	Sources	Included in country policy/plan
Global nutrition goals/targets		
Low birth weight (infants)	SDG	✓
Stunting (children zero to 59 months)	SDG	✓
Wasting (children zero to 59 months)	SDG	✓
Overweight (children zero to 59 months)	SDG	✓
Anemia (non-pregnant women 15 to 49 years)	SDG	✓
Underweight (non-pregnant women 15 to 49 years)	GNMF	✗
Overweight (school-age children and adolescents five to 19 years)	GNMF	✗
Overweight (women over 18 years)	SDG	✓
Overweight (men over 18 years)*	SDG	✓
Hypertension (adults over 18 years)	SDG	✗
Diabetes (adults over 18 years)	SDG	✓
Additional country-specific nutrition goals/targets		
Anemia (children six to 59 months)		✓

✓=Addressed; ✗=Not addressed

Source: *NFNSS 2016–2025* (Bhutan, Royal Government of Bhutan 2016).

Note: SDG = Sustainable Development Goal; GNMF = Global Nutrition Monitoring Framework; * = NFNSS 2016–2025 showed the intent to achieve a reduction in salt/sodium intake but not reduced hypertension

4 Findings: Data Availability for Tracking Progress on Nutrition in Bhutan

4.1 Availability of Data on Program and Policy Actions

Multiple data sources exist in Bhutan. The National Nutrition Survey (NNS) 2015, Micronutrient Indicator Cluster Survey (MICS) 2010 and National Survey for Noncommunicable Disease Risk Factors (NSNCDRF) 2011 are the primary nationally representative population-based surveys. The District Health Information System 2 (DHIS 2) and Electronic Patient Information System (ePIS) are the primary administrative data systems.

Of 41 nutrition actions that Bhutan's policies and programs addressed, our review of population-based surveys revealed that data are available to assess coverage of only 17 actions; this included one for women during preconception, six for women during pregnancy, six for women during delivery and in the postpartum period, and four actions for early childhood. We assessed DHIS 2 and ePIS systems for data availability regarding 15 nutrition actions; together, they yielded data on only seven actions.

None of the data sources, population-based surveys, or administrative data systems contained data on actions for adolescence (Table 4). Regarding actions aimed at women during pregnancy, data for only six of 14 actions was available. Data was not available from population-based surveys on a number of indicators, including those related to IFA supplementation, deworming, and food supplementation during adolescence; calcium supplementation, deworming, weight monitoring, and counseling during pregnancy; newborn care during delivery and the postnatal period; and infant and young child feeding (IYCF), growth monitoring, immunization, identification and management of SAM and MAM during early childhood. For women during delivery and in the postpartum period, data for only six of 11 actions was available. Data was not available in population-based surveys on timing of cord clamping, support for early initiation of breastfeeding, optimal feeding of low-birth-weight infants, counseling of mothers on Kangaroo Mother Care (KMC), and IFA supplementation. For early childhood, data for only four of 12 actions was available. None of the sources contained data on breastfeeding counseling, counseling on complementary feeding, iron-containing micronutrient powder (MNP), and inpatient management of SAM.

Table 4. Data availability on nutrition actions across the life-course

Nutrition actions	Data availability			
	Population-based surveys		Administrative data sources	
	NNS 2015	MICS 2010	DHIS 2	ePIS
Adolescence				
Daily or Intermittent iron and folic acid (IFA) supplementation	✗	✗	–	–
Preventive deworming	✗	✗	–	–
Food supplementation	✗	✗	–	–
Preconception				
Contraception	✗	✓	–	–
Pregnancy				
Antenatal care (ANC) screening by a trained provider	✓	✓	–	–
ANC screening by a trained provider during the first trimester	✓	✗	–	–
Four or more ANC visits	✓	✓	–	–
Daily or intermittent IFA supplementation	✓	✗	✗	✓
Calcium supplementation	✗	✗	–	–
Preventive deworming	✗	✗	–	–
Tetanus toxoid vaccination	✗	✓	–	–
Nutritional counseling on healthy diet	✓	✗	✗	✗
Weight monitoring	✗	✗	–	–
Advice on consuming calcium	✗	✗	–	–
Advice on consuming IFA	✗	✗	–	–
Advice on consuming additional food	✗	✗	✗	✗
Advice on birth preparedness	✗	✗	–	–
Advice on exclusive breastfeeding	✗	✗	✗	✗
Delivery and postnatal period				
Institutional birth	✗	✓	–	–
Skilled birth attendant	✗	✓	–	–
Optimal timing (delayed) of umbilical cord clamping	✗	✗	–	–
Assessment of birth weight	✗	✓	✓	✗
Support for early breastfeeding and immediate skin-to-skin contact	✗	✗	✗	✓
Optimal feeding of low-birth-weight infants	✗	✗	–	–
Counseling of mothers of low-birth-weight infants on Kangaroo Mother Care (KMC)	✗	✗	–	–
Postnatal care (PNC) for babies around day three, day seven, and within six weeks after birth	✗	✓	–	–
PNC for women within three and seven days and within six weeks after delivery	✓	✓	–	–
Breastfeeding counseling	✓	✗	–	–

Nutrition actions	Data availability			
	Population-based surveys		Administrative data sources	
	NNS 2015	MICS 2010	DHIS 2	ePIS
IFA supplementation	✗	✗	–	–
Children (zero to 59 months)				
Breastfeeding counseling	✗	✗	✗	✗
Counseling on appropriate complementary feeding	✗	✗	✗	✗
Iron-containing micronutrient powder (MNP)	✗	✗	✗	✗
Zinc supplementation during diarrhea	✗	✓	✗	✗
Oral rehydration salts (ORS) during diarrhea	✗	✓	–	–
Vitamin A supplementation	✓	✗	✓	✗
Preventive deworming	✓	✗	✓	✗
Growth monitoring (weight assessment)	✗	✗	✓	✗
Counseling on nutritional status	✗	✗	–	–
Identification of severe or moderate underweight	✗	✗	✓	✗
Inpatient management of severe acute malnutrition (SAM)	✗	✗	✗	✗
Immunization	✗	✗	–	–

✓=Available; ✗=Not available; - = Nutrition actions for which data availability was not assessed in administrative data system

Source: Questionnaires of the NNS 2015 (Bhutan, Department of Public Health 2015), MICS 2010 (Bhutan, National Statistics Bureau, UNICEF and UNFPA 2011) and spreadsheet compiled by UNICEF Bhutan country office on data availability in DHIS 2 and ePIS (November, 2020)

Note: NNS = National Nutrition Survey; MICS = Micronutrient Indicator Cluster Survey; DHIS = District Health Information System; ePIS = Electronic Patient Information Systems

4.2 Availability of Data on Key Determinants

Both NNS 2015 and MICS 2010 had data on breastfeeding, complementary feeding, infectious diseases (acute respiratory infection [ARI] and diarrhea), women's status, sanitation and hygiene practices, and food security (Table 5).

Except for dietary diversity among pregnant women, data on all immediate determinants was available in NNS 2015 and MICS 2010. Data availability on underlying determinants was better in NNS 2015 than in MICS 2010. NNS 2015 contained additional data on indicators such as use of toilet, handwashing with soap, safe disposal of faeces by mothers of children under two, and food security; MICS 2010 contained data on marriage after 18 and childbirth after 20.

Data on households covered by social protection schemes was missing from all the data sources reviewed.

Table 5. Potential indicators and data availability on immediate and underlying determinants

Determinants	Potential indicators	Data availability	
		NNS 2015	MICS 2010
Immediate determinants			
Nutrient intake by children			
Breastfeeding			
	Percentage of infants zero to five months who were breastfed within one hour of birth	✓	✓
	Percentage of infants zero to five months who were fed only breast milk	✓	✓
	Percentage of children six to 23 months who had been breastfed in the 24 hours preceding the survey	✓	✓
Complementary feeding			
	Percentage of children six to eight months who had been introduced to solid, semi-solid, or soft foods	✓	✓
	Percentage of children six to 23 months who were consuming at least four out of the seven defined food groups	✓	✓
	Percentage of children six to 23 months who were breastfed and who also achieved the minimum dietary diversity and age-appropriate minimum meal frequency	✓	✓
	Percentage of children six to 23 months who received a minimum acceptable diet apart from breast milk	✓	✓
Infectious diseases			
	Percentage of children zero to 59 months who had had diarrhea in the last week	✓	✓
	Percentage of children zero to 59 months who had had acute respiratory infection (fever and chest drawing) in the last week	✓	✓
Nutrient intake by mothers			
	Percentage of currently pregnant women who were consuming foods from at least five out of the ten food groups	✗	✗
Underlying determinants			
Women's status			
	Percentage of women aged 15 to 49 years who had completed their high school (ten+ years of schooling)	✓	✓
	Percentage of women aged 20 to 24 years who had been married before their eighteenth birthday	✗	✓
	Percentage of women aged 20 to 24 years who had given birth to a child before their twentieth birthday	✗	✓

Determinants	Potential indicators	Data availability	
		NNS 2015	MICS 2010
Sanitation and hygiene			
	Percentage of households with children under two years in which the house had a toilet	✓	✓
	Percentage of children under two years who were living in households with safe water	✓	✓
	Percentage of households with children under two years where the mother also used the toilet	✓	✗
	Percentage of households with children under two years which had a designated place for handwashing with soap	✓	✗
	Percentage of children under two years whose faeces were safely disposed of	✓	✗
Food security			
	Percentage of households moderately or severely food insecure	✓	✗
Socio-economic conditions			
	Percentage of households covered under social protection schemes	✗	✗

✓=Available; ✗=Not available

Source: Questionnaires of the NNS 2015 (Bhutan, Department of Public Health 2015) and MICS 2010 (Bhutan, National Statistics Bureau, UNICEF and UNFPA 2011)

Note: NNS = National Nutrition Survey; MICS = Micronutrient Indicator Cluster Survey

4.3 Availability of Data on Nutrition Outcomes

Data on low birth weight, stunting, wasting, and overweight among children under five years were available in the NNS 2015 and MICS 2010. NNS 2015 also collected data on anemia among non-pregnant women and among children six to 59 months (Table 6). NSNCDRF 2011 collected data on indicators related to NCDs. None of the population-based surveys collected data on overweight among adolescent.

Table 6. Data availability on nutrition outcomes

	Outcome indicators	Data availability		
		NNS 2015	MICS 2010	NSNCDRF 2014
SDG	Low birth weight (percentage of infants born with birth weights under 2500 grams)	✓	✓	-
	Stunting (percentage of children zero to 59 months who were below -2 HAZ)	✓	✓	-
	Wasting (percentage of children zero to 59 months who were below -2 WHZ)	✓	✓	-
	Overweight (percentage of children zero to 59 months who were above 2 WAZ)	✓	✓	-
	Anemia (percentage of non-pregnant women 15 to 49 years who were anemic)	✓	✗	-
GNMF	Underweight (percentage of non-pregnant women 15 to 49 years who had a BMI of less than 18.5 kg/m^2)	✗	✗	✓
	Overweight (percentage of children and adolescents five to 19 years who had a BMI-Z greater than one)	✗	✗	-
	Overweight (percentage of women over 18 years who had a BMI greater than 25 kg/m^2)	✗	✗	✓
SDG	Overweight (percentage of men over 18 years who had a BMI greater than 25 kg/m^2)	✗	✗	✓
	Hypertensive (percentage of adults over 18 years who are had a systolic blood pressure above 140 mmHg and diastolic blood pressure above 90 mmHg)	✗	✗	✓
	Diabetic (percentage of adults over 18 years who had a fasting blood sugar level above 7.0 mmol/l [126 mg/dl])	✗	✗	✓
Country specific	Anemia (percentage of children six to 59 months who are anemic)	✓	✗	-

✓=Available; ✗=Not available; - =Not applicable

Source: Questionnaires of the NNS 2015 (Bhutan, Department of Public Health 2015), the Multiple Indicator Cluster Survey, MICS 2010 (Bhutan, National Statistics Bureau, UNICEF and UNFPA 2011) and NSNCDRF 2014 (WHO, Regional Office for South-East Asia 2014)

Note: NNS = National Nutrition Survey; MICS = Micronutrient Indicator Cluster Survey; WHA = World Health Assembly; NSNCDRF = National Survey for Noncommunicable Disease Risk Factors; SDG = Sustainable Development Goals; GNMF = Global Nutrition Monitoring Framework; HAZ = height-for-age z-score; WHZ = weight-for-height z-score; WAZ = weight-for-age z-score; BMI = body mass index; BMI-Z = body mass index z-score

5 Conclusions and Recommendations

5.1 Policy Gaps

Bhutan has a robust nutrition policy framework and various programs intended to deliver nutrition actions throughout the life-course. Findings show that policies and programs address 41 of the 48 recommended nutrition actions that are applicable in Bhutan. Gaps in addressing nutrition actions are more concentrated for women during preconception and early childhood. Bhutan's nutrition policy and programs do not currently address food supplementation for malnourished lactating women and IFA supplementation during early childhood. Four actions that are addressed by policies but for which there is no implementation program included: IFA supplementation and deworming during preconception, advice about weight after weighing during pregnancy, and outpatient management of SAM and management of MAM during early childhood. National strategies also recognize and address all key determinants of nutrition and to track the progress of nutrition goals included under the SDGs and the GNMF, except for underweight among non-pregnant women 15 to 49 years and overweight among school children and adolescents five to 19 years. National strategies and plans show the intent to track the progress of all nutrition outcome indicators including those of NCDs except hypertension among adults.

5.2 Data Gaps

The gaps in data availability for tracking progress on nutrition are much greater that are the gaps in policies and programs aimed at addressing the recommended nutrition actions. Data is available in NNS 2015 and MICS 2010 on only 17 of 41 nutrition actions that are addressed by national policies and programs. Out of 15 actions we reviewed in the administrative data systems, data is available on only seven actions.

- Gaps in data availability for tracking the progress of nutrition actions during pregnancy are mostly around calcium supplementation, deworming, weight monitoring, and counseling; newborn care during delivery and in the postnatal period; counselling for infant and young child feeding (IYCF), growth monitoring, immunization, identification and management of SAM and MAM during early childhood. Subsequent rounds of surveys should aim to address these gaps.
- Among actions reviewed in administrative systems, data gaps are prominent for interventions during pregnancy and early childhood; these need to be closed.

5.3 Recommendations

This report is intended to spark discussions among the nutrition policy community in Bhutan and where relevant, to support decisions about closing both policy and data gaps. Our primary recommendations are noted below.

- Assess whether the gaps identified in our nutrition policy review are relevant in the context of the current burden of malnutrition in Bhutan; if relevant, then Bhutan's

nutrition policy community should consider updating national nutrition strategies to fully address all forms of malnutrition.

- Review opportunities for strengthening nutrition data collection—both via surveys and administrative data—to close gaps in data needed for tracking progress on existing policies and programs. Given the data gaps identified in our review, efforts to improve the availability of data on child nutrition interventions are likely most important.

6 Appendices

6.1 Appendix 1: Nutrition Actions Addressed by Policies and Programs

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
	Adolescence						
1	**Intermittent or daily IFA supplementation** *(Intermittent If anemia prevalence is more than 20 percent and daily if anemia prevalence is more than 40 percent among non-pregnant women)*	(WHO 2019)	✓ Anemia among women of reproductive age (WRA) is 35 percent (Global Nutrition Report [GNR] country profile)	✓	National Food and Nutrition Security Strategy (NFNSS) 2016–2025 and Action Plan (2016–2018)	✓ **Comprehensive School Health Program**	3
2	**Preventive deworming** *(If prevalence of any soil-transmitted helminth infection is 20 percent or higher among adolescents 11 to 19 years)*	(WHO 2018)	✓ Data not available	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **Comprehensive School Health Program**	3
3	**Food supplementation** *(All countries, all settings)*	*e-Library of Evidence for Nutrition Actions* (eLENA) (WHO, n.d.)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **School Feeding Program**	3

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
	Preconception						
4	**Daily or intermittent IFA supplementation** *(Intermittent if anemia prevalence is more than 20 percent and daily if anemia prevalence is more than 40 percent among non-pregnant women)*	(WHO 2019)	✓ Anemia among WRA is 35 percent (GNR country profile)	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✗	NA
5	**Preventive deworming** *(If prevalence of any soil-transmitted helminth infection is 20 percent or higher among women of reproductive age 15 to 49 years)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✗	NA
6	**Contraception** *(All countries, all settings)*	Every Woman Every Child, 2016–2030 (EWEC 2016)	✓	✓	National Reproductive Health Strategy of Bhutan (NRHS) 2018–2023	✓ **National Family Planning Program**	**3**
7	**Iodine supplementation** *(If 20 percent or fewer households have access to iodized salt and pregnant women are difficult to reach)*	(WHO 2019)	✗ Households with access to iodized salt is 91 percent	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✗	NA
	Pregnancy						
8	**Antenatal care (ANC) screening by a trained provider** *(All countries, all settings)*	(WHO 2004, 2016)	✓	✓	NRHS 2018–2023 and Action Plan (2016–2018)	✓ **Noncommunicable Diseases (NCD) Program**	**3**

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
9	**ANC screening by a trained provider during first trimester** *(All countries, all settings)*	(WHO 2004, 2016)	✓	✓	NRHS 2018–2023 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
10	**Four or more ANC visits** *(All countries, all settings)*	(WHO 2004, 2016)	✓	✓	NRHS 2018–2023 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
11	**Energy and protein dietary supplementation** *(If underweight prevalence among women is more than 20 percent)*	(WHO 2019)	✗	✗		✗	NA
12	**Daily or intermittent IFA supplementation** *(Daily in all countries, all settings; intermittent if anemia prevalence among pregnant women is less than 20 percent or daily iron is not acceptable due to side-effects)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
13	**Vitamin A supplementation** *(Where five percent or more of women have a history of night blindness in pregnancies in the past three to five years, or if 20 percent or more of pregnant women have vitamin A deficiency)*	(WHO 2019)	✗	✗	NA	✗	NA
14	**Calcium supplementation** *(Where dietary calcium intake is low)*	(WHO 2019)	✓	✓	Accelerated Nutrition Action Plan (ANAP) 2016–2018	✓ **NCD Program**	**3**

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
15	**Iron-containing micronutrient powder (MNP) supplementation** (Settings with a high prevalence of nutritional deficiencies)	(WHO 2019)	✗	✗	NA	✗	NA
16	**Preventive deworming** *(Where pregnant women have a 20 percent or higher prevalence of infection with hookworm or T. trichiura infection AND a 40 percent or higher prevalence of anemia)*	(WHO 2019)	Data not available	✓	ANAP 2016–2018	✓ **NCD Program**	3
17	**Tetanus toxoid vaccination** *(All countries, all settings)*	(WHO 2016)	✓	✓	Bhutan Every Newborn Action Plan (BENAP) 2016–2023	✓ **NCD Program**	**3**
18	**Nutritional counseling on healthy diet** *(If underweight prevalence among women is more than 20 percent)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
19	**Weight monitoring** *(All countries, all settings)*	(WHO 2016)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
20	**Advice about weight after weighing** *(All countries, all settings)*	(WHO 2016)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✗	NA
21	**Advice on consuming calcium** *(All countries, all settings)*	(WHO 2019)	✓	✓	BENAP 2016–2023	✓ **NCD Program**	**3**
22	**Advice on consuming IFA** *(All countries, all settings)*	(WHO 2019)	✓	✓	BENAP 2016–2023	✓ **NCD Program**	**3**

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
23	**Advice on consuming additional food** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
24	**Advice on birth preparedness** *(All countries, all settings)*	(WHO 2015)	✓	✓	NRHS 2012–2016 and Action Plan (2016–2018); BENAP 2016–2023	✓ **NCD Program**	**3**
25	**Advice on exclusive breastfeeding** *(All countries, all settings)*	(WHO 2019)	✓	✓	BENAP 2016–2023	✓ **NCD Program**	**3**
	Delivery and postnatal						
26	**Institutional birth** *(All countries, all settings)*	(EWEC 2016)	✓	✓	NRHS 2012–2016 and Action Plan (2016–2018); BENAP 2016–2023	✓ **NCD Program**	**3**
27	**Skilled birth attendant** *(All countries, all settings)*	(EWEC 2016)	✓	✓	BENAP 2016–2023	✓ **NCD Program**	**3**
28	**Optimal timing (delayed) of umbilical cord clamping** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018); BENAP 2016–2023	✓ **NCD Program**	**3**
29	**Assessment of birth weight** *(All countries, all settings)*	(WHO 2013)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018); BENAP 2016–2023	✓ **NCD Program**	**3**
30	**Support for early breastfeeding and immediate skin-to-skin contact** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018); BENAP 2016–2023	✓ **NCD Program**	**3**

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
31	**Optimal feeding of low-birth-weight infants** *(All countries, all settings)*	(WHO 2019)	✓	✓	BENAP 2016–2023	✓ **NCD Program**	**3**
32	**Counseling of mothers of low-birth-weight infants on Kangaroo Mother Care (KMC)** *(All countries, all settings)*	(WHO 2019)	✓	✓	BENAP 2016–2023	✓ **NCD Program**	**3**
33	**Postnatal care (PNC) for babies around day three, day seven, and within six weeks after birth** *(All countries, all settings)*	(EWEC 2016)	✓	✓	NRHS 2018–2023; BENAP 2016–2023	✓ **NCD Program**	**3**
34	**PNC for women within three and seven days and within six weeks after delivery** *(All countries, all settings)*	(EWEC 2016)	✓	✓	NRHS 2018–2023	✓ **NCD Program**	**3**
35	**Breastfeeding counseling** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018); BENAP 2016–2023	✓ **NCD Program**	**3**
36	**Iron and folic acid (IFA) supplementation** *(With a 20 percent or higher population prevalence of gestational anemia)*	(WHO 2019)	✓ Prevalence of gestational anemia is 27 percent (NNS 2015)	✓	NFNSS 2016–2025 and Action Plan (2016–2018), BENAP 2016–2023	✓ **NCD Program**	**3**
37	**Food supplementation for malnourished lactating women** *(All countries, all settings)*	(WHO 2018)	✓	✗	NA	✗	NA

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
	Early childhood						
38	**Breastfeeding counseling** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
39	**Counseling on appropriate complementary feeding** *(All countries, all settings)*	(WHO 2019)	✓	✓	Food and Security Nutrition Policy (FNSP) 2014; NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
40	**Food supplementation for complementary feeding** *(In food-insecure populations)*	Bhutta et al. 2013; eLENA (WHO, n.d.)	✗	✗	NA	✗	NA
41	**Iron-containing MNP** *(In which the prevalence of anemia in children under five years of age is 20 percent or more)*	(WHO 2019)	✓ Prevalence of anemia among children six to 59 months is 43 percent (NNS 2015)	✓	ANAP 2016–2018	✓ **NCD Program**	**2**
42	**Daily IFA supplementation** *(Daily if anemia prevalence among children aged six to 59 months is 40 percent or more; iIntermittent for children aged 24 to 59 months if anemia prevalence among this group is 20 percent or more).*	(WHO 2019)	✓ **P**revalence of anemia among children six to 59 months is 43 percent (NNS 2015)	✗	NA	✗	NA

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
43	**Zinc supplementation during diarrhea** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
44	**Oral rehydration salts (ORS) during diarrhea** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
45	**Vitamin A supplementation** *(Where the prevalence of night blindness is one percent or more in children aged 24 to 59 months, or the prevalence of vitamin A deficiency is 20 percent or higher in infants and children aged six to 59 months)*	(WHO 2019)	✓ Data not available	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
46	**Preventive deworming** *(Living in areas where the baseline prevalence of any soil-transmitted infection is 20 percent or higher among children aged 12 months and older)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
47	**Growth monitoring (weight assessment)** *(All countries, all settings)*	(WHO 2019)	✓	✓	Infant and Young Child Feeding (IYCF) Practice Policy 2015	✓ **NCD Program**	**3**
48	**Counseling on nutritional status** *(All countries, all settings)*	(WHO 2019)	✓	✓	IYCF Practice Policy 2015	✓ **NCD Program**	**3**
49	**Identification of severe or moderate underweight** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**

S.N	Nutrition actions	References	Nutrition action is applicable	Policy		Program	
				Nutrition action is addressed by policy	Policy document name	Program availability and program name	Geographic coverage (1 = Pilot; 2 = Scale up in select districts; 3 = Nationwide)
50	**Inpatient management of severe acute malnutrition (SAM)** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✓ **NCD Program**	**3**
51	**Outpatient management of SAM** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025	✗	NA
52	**Management of moderate acute malnutrition (MAM)** *(All countries, all settings)*	(WHO 2019)	✓	✓	NFNSS 2016–2025 and Action Plan (2016–2018)	✗	NA
53	**Immunization** *(All countries, all settings)*	(EWEC 2016)	✓	✓	National Immunization Policy (NIP)	✓ **NCD Program**	**3**

NA = Not applicable

6.2 Appendix 2: Program Implementation/Operational Guidelines for Nutrition Actions

S.N	Nutrition actions	Program Implementation/operational guidelines
	Adolescence	
1	Daily or intermittent iron and folic acid (IFA) supplementation	*Strategy for Control of Iron Deficiency Anemia in Bhutan (Final Draft)* (Bhutan, Ministry of Health 2018) recommends that a weekly IFA supplement (60 mg of iron and 400 mg of folic acid) be given to adolescent girls through the schoolteacher for school-going adolescent girls, and through Community Health Workers, Nonformal Education (NFE) volunteers, and scouts for out-of-school adolescent girls.
2	Preventive deworming	*Strategy for Control of Iron Deficiency Anemia in Bhutan (Final Draft)* (Bhutan, Ministry of Health 2018) recommends twice-yearly deworming for in- and out-of-school adolescent girls.
3	Food supplementation	Under *School Feeding Program* all children in the targeted schools are eligible to receive school meals or participate in the school feeding program. School meals are free for all children.
	Preconception	
4	Contraception	Various family planning methods are available; these include long-acting reversible contraceptives (LARC), short-acting reversible contraceptives (SARC), fertility awareness-based (FAB) methods, limiting methods, female sterilization, and male sterilization.
5	Iodine supplementation	*Iodine Deficiency Disorders Control Program (IDDCP)* focuses on monitoring the levels of iodine in members of the population and iodine content in salt to ensure sustained elimination.
	Pregnancy	
6	Antenatal care (ANC) screening by a trained provider	Antenatal care is provided either at health facilities or through outreach clinics.
7	ANC screening by a trained provider during the first trimester	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019): Pregnant women should receive first ANC visit before 12 weeks of pregnancy.
8	Four or more ANC visits	*National Reproductive Health Strategy of Bhutan (NRHS) (2018–2023)* (Bhutan, Department of Public Health 2018) recommends at least four ANC visits, one each in the second and third trimester and two visits in the fourth trimester.
9	Daily or intermittent IFA supplementation	*Strategy for Control of Iron Deficiency Anemia in Bhutan (Final Draft)* (Bhutan, Ministry of Health 2018) recommends a daily IFA supplement (60 mg of iron and 400 mg of folic acid) for all pregnant women from second trimester onwards. *Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019): IFA supplements should be given to pregnant women from the twelfth week of pregnancy.
10	Calcium supplementation	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019): Calcium supplements should be given to pregnant women from the twelfth week of pregnancy.

S.N	Nutrition actions	Program
		Implementation/operational guidelines
11	Preventive deworming	*Strategy for Control of Iron Deficiency Anemia in Bhutan (Final Draft)* (Bhutan, Ministry of Health 2018) recommends a single dose of albendazole (400 mg) in the second trimester. *Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019): Deworming should be given at the twentieth week of pregnancy, during the second antenatal visit.
12	Tetanus toxoid vaccination	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019): The first dose of tetanus toxoid (TT) should be given at as young an age as possible; the second dose should be given four weeks later; the third dose should be given six months after the second; the fourth dose should be given one year after the third dose; and the fifth dose should be given one year after the fourth dose.
13	Nutritional counseling on healthy diet	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019): During the first ANC visit (before the twelfth week of pregnancy) the pregnant woman should receive education on healthy eating and staying physically active.
14	Weight monitoring	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019): All pregnant women should be weighed during each ANC visit and weight should be recorded in antenatal record book.
15	Advice about weight after weighing	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) advises that iron and calcium tablets should not be taken together, nor should tea be had with meals, as both decrease the absorption of iron.
16	Advice on consuming IFA	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) advises that iron and calcium tablets should not be taken together, nor should tea be had with meals, as both decrease the absorption of iron.
17	Advice on consuming additional food	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) specifies the general advice that mothers should be given during pregnancy, including that they should eat more frequent and smaller meals and that they should eat a variety of locally available healthy snacks each day such as fruit, vegetables, cheese, milk, and meat.
18	Advice on birth preparedness	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) states that a health worker should discuss a birth preparedness plan with the pregnant woman at the first visit (before 12 weeks) and at the sixth visit (36 weeks).
19	Advice on exclusive breastfeeding	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) states that a health worker should counsel a pregnant woman about breastfeeding during the fourth visit (at 30 weeks) and fifth visit (at 34th weeks).
	Delivery and postnatal	
20	Institutional birth	*National Reproductive Health Strategy of Bhutan (NRHS) (2018–2023)* (Bhutan, Department of Public Health 2018) aims to improve access to emergency obstetric services.
21	Skilled birth attendant	*National Reproductive Health Strategy of Bhutan (NRHS) (2018–2023)* (Bhutan, Department of Public Health 2018) aims to improve access to skilled care for newborns.
22	Assessment of birth weight	Health workers are trained on delayed cord clamping under the Reproductive, Maternal, Newborn, Health (RMNH) program.

S.N	Nutrition actions	Program
		Implementation/operational guidelines
23	Support for early breastfeeding and immediate skin-to-skin contact	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019): Baby's weight and height are recorded in the Mother & Child Health Handbook.
24	Optimal feeding of low-birth-weight infants	*Infant and Young Child Feeding Practice Policy of Bhutan*, 2015—*Draft* (Bhutan, Ministry of Health 2015): Adequate provision should be made for the expression, storage, and handling of breast milk, especially in neonatal special care units. Babies who can nurse should be encouraged to breastfeed, and mothers should be supported in supplying expressed breast milk (EBM) to newborns who are not able to nurse. Health workers should demonstrate cup feeding and correct positioning to new mothers.
25	Counseling of mothers of low-birth-weight infants on Kangaroo Mother Care (KMC)	*Infant and Young Child Feeding Practice Policy of Bhutan*, 2015—*Draft* (Bhutan, Ministry of Health 2015): Health workers should promote and support KMC. *Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) recommends continuing KMC for preterm and low-birth-weight babies.
26	Postnatal care (PNC) for babies around day three, day seven and within six weeks after birth	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) recommends five postnatal visits: the first within 24 hours of birth for institutional deliveries and as soon as possible for home deliveries, the second on day three after delivery, the third visit one to two weeks after delivery; the fourth visit three weeks after delivery, and the fifth visit six weeks after delivery.
27	PNC for women within three and seven days and within six weeks after delivery	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) recommends five postnatal visits: the first within 24 hours of birth for institutional deliveries and as soon as possible for home deliveries, the second on day three after delivery, the third visit one two weeks after delivery; the fourth visit three weeks after delivery; and the fifth visit six weeks after delivery
28	Breastfeeding counseling	*Infant and Young Child Feeding Practice Policy of Bhutan*, 2015—*Draft* (Bhutan, Ministry of Health 2015) recommends encouraging new mothers to breastfeed babies on demand.
29	IFA supplementation	*Strategy for Control of Iron Deficiency Anemia in Bhutan (Final Draft)* (Bhutan, Ministry of Health 2018) recommends a daily IFA supplement (60 mg of iron and 400 mg of folic acid) until 90 days after delivery.
	Early childhood	
30	Breastfeeding counseling	*Infant and Young Child Feeding Practice Policy of Bhutan*, 2015—*Draft* (Bhutan, Ministry of Health 2015): Mothers should be encouraged to breastfeed for six months; health workers should promote breastfeeding on demand; health workers should encourage mothers to continue breastfeeding until the baby is at least two years old and to actively feed the child.

S.N	Nutrition actions	Program
		Implementation/operational guidelines
31	Counseling on appropriate complementary feeding	*Infant and Young Child Feeding Practice Policy of Bhutan*, 2015—*Draft* (Bhutan, Ministry of Health 2015) has made the following provisions: mothers of children over six months should be given informed choices on locally available complementary foods; health workers should educate mothers on the importance of including food from more than four food groups in the complementary foods they are giving the child; all health workers dealing with mothers and children should be trained on the IYCF module; infant and young child feeding should be included in the school curriculum; social welfare should be improved, especially among vulnerable groups, and it should also facilitate the employment of members of the more vulnerable segments of society through its overseas employment programmed.
32	Micronutrient powder (MNP) supplementation	*Accelerating Actions for Reducing Under Nutrition and Micronutrient Deficiencies Among Women and Children* (Bhutan, National Nutrition Task Force, n.d.) provides Sprinkle (MNP) for children between six and 23 months.
33	Zinc supplementation during diarrhea	Under the *Integrated Management of Childhood Illness (IMCI) program*, children under five years should receive zinc during episodes of diarrhea.
34	Oral rehydration salts (ORS) during diarrhea	Under the IMCI program, children under five years should receive ORS along with zinc during episodes of diarrhea.
35	Vitamin A supplementation	All children six to 59 months should receive vitamin A tablets biannually.
36	Preventive deworming	Under the vitamin A Supplementation Program, along with Vitamin A children also receive deworming tablets biannually.
37	Growth monitoring (weight assessment)	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) recommends that mothers weigh their baby every month for the first year of their life and every three months thereafter, until a child is enrolled in school.
38	Counseling on nutritional status	Under Growth Monitoring Plus Package children's parents receive counseling following growth monitoring.
39	Identification of severe or moderate underweight	*Mother & Child Health Handbook* (Bhutan, Ministry of Health 2019) recommends mothers to weigh their baby every month for the first year of their life. *Infant and Young Child Feeding Practice Policy of Bhutan*, 2015—*Draft* (Bhutan, Ministry of Health 2015): Health workers should use the standard operational procedure for screening and managing malnutrition cases. Weight-for-height is being used to monitor SAM and MAM cases at health facilities and outreach sites.
40	Inpatient management of severe acute malnutrition (SAM)	*Infant and Young Child Feeding Practice Policy of Bhutan*, 2015—*Draft* (Bhutan, Ministry of Health 2015): The Royal Government of Bhutan will establish Nutrition Rehabilitation Units in each district. *Accelerating Actions for Reducing Under Nutrition and Micronutrient Deficiencies Among Women and Children* (Bhutan, National Nutrition Task Force, n.d.) aims to strengthen treatment of SAM and MAM services in hospitals.
41	Immunization	All children under two years should receive the following vaccinations: BCG (tuberculosis), polio, diphtheria/tetanus/pertussis (DTP), measles and rubella, Tetanus Hib, Hepatitis B, and human papilloma virus (HPV).

6.3 Appendix 3: Activities Included in National Strategies to Address the Key Determinants of Nutrition

Key determinants of nutrition	Strategies that recognize	Activities included in national strategies
1. Immediate determinants		
a. Inadequate nutrient intake by children		
Breastfeeding	National Food and Nutrition Security Strategy (NFNSS) 2016–2025 and Action Plan (2016–2018)	*Food and Nutrition Security Policy of the Kingdom Of Bhutan, 2015* (Bhutan, Royal Government of Bhutan 2014) aims to encourage early initiation of breastfeeding. *National Food and Nutrition Security Strategy (NFNSS) 2016–2025* and Action Plan (2016–2018) (Bhutan, Royal Government of Bhutan 2016) aims to ensure exclusive breastfeeding and achieve optimal complementary feeding practices in children. In order to achieve this strategy, it aims to revitalize the Baby-Friendly Hospital Initiative (BFHI) at referral hospitals, and to develop and disseminate behavior change communication/information, education and communication (BCC/IEC) materials and tools on Infant and Young Child Feeding (IYCF) to health facilities and communities. It also aims to initiate the development of legislation for regulating the use of breast milk substitutes (BMS). It intends to advocate for workplace support of breastfeeding and to scale up the implementation of capacity building programs for relevant healthcare personnel and other service providers in IYCF counseling and growth monitoring.
Complementary feeding	NFNSS 2016–2025 and Action Plan (2016–2018)	*Food and Nutrition Security Policy of the Kingdom Of Bhutan, 2014* (Bhutan, Royal Government of Bhutan 2014) aims to promote the continuation of breastfeeding until the child is at least two years, with adequate and appropriate complementary feeding beginning after six months. *National Food and Nutrition Security Strategy (NFNSS) 2016–2025* and Action Plan (2016–2018) (Bhutan, Royal Government of Bhutan 2016) aims to ensure exclusive breastfeeding and achieve optimal complementary feeding practices in children. It aims to: 1) scale up the implementation of capacity building programs for relevant healthcare personnel and other service providers in IYCF counseling and growth monitoring; 2) develop and promote locally available and nutritionally adequate complementary foods for children six to 23 months; 3) implement a national mass media communication campaign to promote maternal nutrition and IYCF; 4) develop and disseminate BCC/IEC materials and tools on IYCF to health facilities and communities.
Infectious diseases	NFNSS 2016–2025 and Action Plan (2016–2018)	*National Food and Nutrition Security Strategy (NFNSS) 2016–2025* and Action Plan (2016–2018) (Bhutan, Royal Government of Bhutan 2016):one of the strategic objectives of this strategy is to improve the nutrition status of sick children (those suffering from infectious and parasitic diseases).

b. Inadequate nutrient intake by mothers	NFNSS 2016–2025 and Action Plan (2016–2018)	*National Food and Nutrition Security Strategy (NFNSS) 2016–2025* and Action Plan (2016–2018) aims to Implement national mass media communication campaign to promote maternal nutrition
2. Underlying determinants		
a. Women's status		
Education	NFNSS 2016–2025 and Action Plan (2016–2018)	*National Reproductive Health Strategy of Bhutan (2018–2023)* (Bhutan, Department of Public Health 2018): The Adolescent Health Program aims to help girls complete their education (primary and secondary).
Right age of marriage/childbirth	NFNSS 2016–2025 and Action Plan (2016–2018)	Adolescent Health Program aims to delay teen marriage and childbirth.
b. Sanitation and hygiene	NFNSS 2016–2025 and Action Plan (2016–2018)	*National Food and Nutrition Security Strategy (NFNSS) 2016–2025* and Action Plan (2016–2018) (Bhutan, Royal Government of Bhutan 2016) aims to promote health, hygiene, and sanitation, including handwashing in early childhood care and development (ECCD) centers; it also aims to improve nutritional status by ensuring good water quality, appropriate sanitation, and hygiene.
c. Food security	NFNSS 2016–2025 and Action Plan (2016–2018)	*National Food and Nutrition Security Strategy (NFNSS) 2016–2025* and Action Plan (2016–2018) (Bhutan, Royal Government of Bhutan 2016) aims to collaborate with all sectors of society to improve food and nutritional security, especially for those at higher risk of malnutrition such as children, women, the elderly, and people with special needs; it aims to achieve its targets by 2025.
d. Socio-economic conditions	NFNSS 2016–2025 and Action Plan (2016–2018)	Not addressed

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