



A mother receives packets of micronutrient powders from a health centre in Bhutan

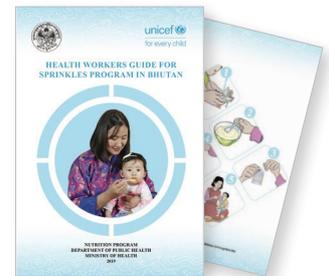
# Addressing micronutrient gaps to reduce anaemia in Bhutan's young children: Early experiences in home fortification

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## Background

Childhood malnutrition remains a persistent challenge in Bhutan, despite steady improvements over the years. Bhutan's most recent national nutrition survey (NNS 2015) reported a 4% prevalence of wasting and a 21% stunting rate in children under five years old<sup>1</sup>. In children aged 6–59 months, over 44% were found to be anaemic<sup>1</sup>, a prevalence level classified as a severe public health issue by the World Health Organization (WHO) and a national cause of concern. There is an urgent need to invest in interventions in early childhood to address anaemia and thereby accelerate human capital development.

The very high prevalence of anaemia in children in Bhutan suggests that micronutrients are lacking in their diets. Sub-optimal infant and young child feeding practices (IYCF) are a contributing driver of childhood anaemia<sup>2</sup>. The diets of children aged 6–23 months in the country are characterised by poor dietary diversity and feeding frequency: only one in eight children (12%) are fed a minimum acceptable diet and only 17% have iron-rich foods in their diets<sup>1</sup>.

Childhood anaemia has been identified as a severe public health issue since 2003, when the country's first national anaemia survey found 81% of children under five to

be anaemic<sup>3</sup>. This prompted an emphasis on programmes such as deworming; counselling on infant and young child feeding; and water, sanitation and hygiene (WASH) to address the problem. Although the most recent National Nutrition Survey (2015) found prevalence of anaemia in children under five had decreased to almost half the levels in 2003, it remains a significant public health issue for Bhutan and there was an urgent need to fill the gap in current interventions.

## Addressing anaemia through improving young children's diets

The health system plays a critical role in delivering a range of micronutrient interventions to infants and young children. Globally, WHO recommends that either 'point-of-use' fortification of complementary foods with iron-containing micronutrient powders (MNPs) or iron supplementation in syrup form is given to infants and young children aged 6–23 months in populations where child anaemia is a serious public health problem<sup>4</sup>.

The Government of Bhutan, with support from UNICEF, introduced a programme in 2019 to distribute MNPs to children aged 6–23 months to address micronutrient gaps in their diets, improve feeding practices and reduce anaemia. The programme aims to

increase the proportion of children with a minimum acceptable diet from 12% to over 25% and to contribute to a reduction in the prevalence of anaemia from 44% to 26% within the next five years (by 2025)<sup>4</sup>.

## Creating an enabling environment to introduce MNPs

To set out the country's vision, policy directions and operational plans for addressing childhood anaemia, the government established a special task force consisting of policy makers and technical experts from a broad range of stakeholders (key departments in the Ministry of Health, hospitals, academia and UNICEF). The special task force deliberated on a number of policy options to address childhood anaemia, drawing on

<sup>1</sup> Nutrition Programme. National Nutrition Survey (NNS). Ministry of Health; 2015.

<sup>2</sup> *Determinants of stunting, wasting, anaemia and infant & young child feeding (IYCF) in Bhutan: Secondary analysis of the national datasets from the National Nutrition Survey 2015*. Thimphu, Bhutan: Nutrition Programme, Department of Public Health, Ministry of Health; 2017.

<sup>3</sup> Nutrition Programme. National Anaemia Survey. Ministry of Health; 2003.

<sup>4</sup> *An assessment of the acceptability of point-of-use micronutrient powder in complementary foods of children aged 6-23 months from three districts of Bhutan*. Nutrition Programme. Ministry of Health, Bhutan.

global and regional evidence and the experiences of other countries. It also explored various programme-design elements needed to maximise the coverage, quality and effectiveness of interventions, such as the benefits of an integrated package of interventions that builds on the existing IYCF programme.

The task force concluded that point-of-use fortification of complementary foods with MNPs provided a comparative advantage over other supplementation options, such as iron syrup, because:

- MNPs have the potential to improve complementary feeding more holistically by encouraging the use of locally available diverse foods and improving feeding practices;
- children in Bhutan are likely to have multiple micronutrient deficiencies, which MNPs are better able to address as they contain multiple micronutrients rather than iron alone;
- according to the available literature, iron-containing MNPs have fewer iron-related side-effects, making them more acceptable to children than iron syrup.

Following the deliberations of the task force, point-of-use fortification of complementary foods with MNPs was endorsed in 2019 as one of a number of approaches to address childhood anaemia in Bhutan. In addition, longer-term and sustainable solutions are needed to address the problem, including the promotion of diverse diets for infants and young children that include a range of locally available foods.

## Designing and piloting MNPs with scale-up in mind

Bhutan delivers all maternal and child health services free of charge through a single delivery platform, mother and child health clinics (MCH). These deliver services across all levels of the health system, including outreach clinics. The programme approach for MNPs integrates the powders into this existing MCH package that is delivered through health facility and community-based outreach platforms. This mode of delivery has great potential to reach children aged 6–23 months because the MCH service coverage through these platforms is reported to be more than 91%<sup>3</sup>.

Social behaviour change is a critical component of the programme. Health workers are responsible for conducting IYCF counselling sessions for mothers and caregivers. There is a strong focus on promoting locally available nutritious foods to improve the diversity of young children's diets. Educational and counselling tools and job aids, including posters, videos and brochures, have been developed to promote local recipes for complementary feeding and to provide

## Distribution and composition of MNPs

Health workers distribute MNPs free of charge to all children aged 6–23 months during regular child visits to MCH clinics in health facilities and outreach clinics. Thirty sachets of MNPs are boxed as one unit and each unit is distributed to the children on the scheduled visits to the MCH clinics, which are at 6, 8, 10, 15, 18 and 21 months. The mothers or other caregivers are counselled on how to feed their child, with one sachet of MNPs every Monday, Wednesday and Friday for children aged 6–11 months and on Monday and Friday for children aged 12–24 months. This schedule was adopted to ensure that each child receives around 90 sachets of MNPs per year.

The MNPs come in a 1-gram sachet and comprise 15 different micronutrients:

Vitamin A	400 µg	Vitamin B6	0.5 mg	Vitamin D	5 µg
Vitamin B1	500 µg	Folic acid	150 µg	Vitamin E	5 mg
Vitamin B2	500 µg	Vitamin B12	0.9 µg	Niacin	6 mg
Vitamin C	30 mg	Iron	10 mg	Copper	560 µg
Selenium	17 µg	Zinc	4.1 mg	Iodine	90 µg

guidance on appropriate feeding practices to help health workers counsel mothers/caregivers on how to give MNPs to children.

Before the nationwide scale-up, a pilot study was conducted in early 2019 to test service-delivery platforms for delivering MNPs and to assess acceptability and compliance with MNPs and changes in child feeding practices. The pilot was undertaken in three health facilities (one hospital and two basic health units) in three of the poorest districts from three regions of Bhutan. After 12 weeks of the pilot, the intervention achieved a compliance rate of over 95%. In addition, there were improvements in caregiver knowledge, as well as child feeding behaviours across three main complementary feeding indicators: minimum meal frequency (increased from 78% to 89%), minimum dietary diversity (increased from 43% to 55%), and minimum adequate diet (increased from 33% to 49%)<sup>4</sup>.

The health workers in the pilot sites were instrumental in bringing about these positive outcomes as they were able to counsel on the use of MNPs and IYCF. The MNPs were integrated into the existing IYCF and growth-monitoring programme, which meant that the beneficiaries were automatically enrolled for MNPs when they attended for these services. Learning from the pilot study was incorporated into the programme design for scaling up.

## Scaling up the programme

Based on the successful pilot, the MNP programme was formally launched by the Health Minister in September 2019 in one of the pilot districts, with a plan to scale up in a phased manner to all facilities by June 2020. To ensure health-system readiness for scale-up, a cascade training of trainers (ToT) model was developed to position trainers in different locations to support the training of MCH health workers in all health facilities across Bhutan. In addition, supplies of MNPs and associated education and counselling tools are being distributed to all health facilities.

## Challenges

Programme sustainability has been recognised as one of the major challenges

to long-term implementation though the routine MCH services financed by government. Initial financial support (about USD 300,000) is being provided by UNICEF to support programme design, piloting capacity building and programme evaluation until 2023. Thereafter, MNP intervention costs are expected to be incorporated into the national budget to ensure sustainable financing. Continued high-level advocacy is being conducted to this end to ensure political commitment to financing implementation of the intervention at scale.

The COVID-19 global pandemic has had an impact on programme implementation. Although Bhutan has not had any community transmission, recommendations for physical distancing and limits on numbers allowed to attend meetings are still being enforced. In response, virtual training sessions are being conducted, especially for those health workers who were not able to attend the ToTs, and officials from the Nutrition Programme are making visits to the health facilities to supervise and ensure programme implementation.

## Next steps

The programme is providing a means to address gaps in the micronutrient content of young children's diets and to simultaneously reinforce optimal IYCF practices in Bhutan. Immediate next steps are to initiate a system of continuous monitoring and supervision to ensure quality implementation. There are ongoing discussions on including key programme indicators (e.g., MNP distribution, child feeding, etc.) into the Health Management Information System, and there are ongoing plans to evaluate programme impact over the next five years to guide programming.

The MNP programme is also looking to tie in with the upcoming conditional cash-transfer scheme for women, which aims to accelerate improvements in maternal and child nutrition. Efforts are already underway to strengthen linkages with the Ministry of Education and other relevant sectors to improve food systems and to ensure availability, accessibility and utilisation of nutritious, locally available and diverse foods.