

# **TARGETS FOR 2025**









## **GLOBAL NUTRITION MONITORING FRAMEWORK** OPERATIONAL GUIDANCE FOR TRACKING PROGRESS IN MEETING

# TARGETS FOR 2025

WITH SUPPORT FROM TECHNICAL EXPERT ADVISORY GROUP ON NUTRITION MONITORING (TEAM)

December 2017





Global Nutrition Monitoring Framework: operational guidance for tracking progress in meeting targets for 2025.

ISBN 978-92-4-151360-9

#### © World Health Organization 2017

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <u>https://creativecommons.org/Licenses/by-nc-sa/3.0/igo</u>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

**Suggested citation**. Global Nutrition Monitoring Framework: operational guidance for tracking progress in meeting targets for 2025. Geneva: World Health Organization; 2017. Licence: <u>CC BY-NC-SA 3.0 IGO</u>.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

**Sales, rights and licensing.** To purchase WHO publications, see <u>http://apps.who.int/bookorders</u>. To submit requests for commercial use and queries on rights and licensing, see <u>http://www.who.int/about/licensing</u>.

**Third-party materials.** If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

**General disclaimers.** The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Cover design and layout: Alberto March (Barcelona, Spain). Printed in Switzerland.

## **CONTENT**

Acknowledgements	V
Abbreviations	VI
List of tables	VII
	4
1 BACKGROUND	1
1.1 Objectives of the GNMF	3
1.2 Vision for establishment of national health data systems	5
2 RATIONALE FOR THE GNMF INDICATORS	6
2.1 Rationale for WHA global targets	8
2.2 Rationale for intermediate outcome indicators	10
2.3 Rationale for process indicators	10
2.4 Rationale for policy environment and capacity indicators	12
<b>3 DETAILED GUIDANCE ON INDICATORS FOR THE SIX WHA GLOBAL TARGETS</b>	15
3.1 Stunting in children under five years of age	16
3.2 Anaemia in women of reproductive age	18
3.3 Low birth weight	21
3.4 Overweight in children under five years of age	23
3.5 Exclusive breastfeeding in infants aged six months or less	25
3.6 Wasting in children under five years of age	27
4 INTERMEDIATE OUTCOME, PROCESS AND POLICY ENVIRONMENT AND CAPACITY INDICATORS	31
4.1 Intermediate outcome indicators	32
4.1.1 Coverage of diarrhoea treatment	32
4.1.2 Low BMI in women aged 15–49 years	34
4.1.3 Adolescent fertility rate	35
4.1.4 Overweight and obesity in women 18+ years of age	36
4.1.5 Overweight and obesity in school-age children and adolescents	37
4.2 Process indicators	38
4.2.1 Minimum dietary diversity	38
	50

4.2.3	Population using safely managed sanitation services	42
4.2.4	Antenatal iron supplementation	44
4.2.5	Births in baby-friendly facilities	46
4.2.6	Breastfeeding counselling	47
4.3 Policy	environment and capacity indicators	48
4.3.1	Nutrition professionals density	48
4.3.2	International Code of Marketing of Breast-milk Substitutes	50
4.3.3	Maternity protection laws or regulations	51

### REFERENCES

52

ANNEXES		57
Annex 1	Summary of the Global Nutrition Monitoring Framework indicators	57
Annex 2	Essentials of length/height measurements	63
Annex 3	Haemoglobin adjustment for smokers and people residing in high altitude	67
Annex 4	Adjustment for low birth weight	71
Annex 5	Weight measurements	73
Annex 6	Operationalizing Minimum Dietary Diversity (MDD) using quantitative dietary data	75



## **ACKNOWLEDGEMENTS**

This operational guidance is an outcome of the WHO-UNICEF Technical Expert Advisory group on nutrition Monitoring (TEAM) and was supported by the Bill & Melinda Gates Foundation.

Members of the TEAM: Rafael Flores-Ayala, Mary Arimond, Rebecca Heidkamp, Purnima Menon, Trevor Croft, Patrick Webb, Luz Maria De-Regil, Eline Korenromp, Faith Thuita, and Abul Kalam Azad, for their technical input in refining and developing specific indicators that required additional operational guidance.

Kuntal Kumar Saha (WHO Headquarters) for conceptualizing this operational guidance and leading its writing and revision; Elaine Borghi, Monika Blössner and Mercedes de Onis (WHO Headquarters), for preparing the first draft of the operational guidance for its review by Member States in an Informal Consultation in 2015 and providing feedback to subsequent versions; Francesco Branca, Elisa Dominguez, Kaia Engesveen, Laurence Grummer-Strawn, Chizuru Nishida, Juan Pablo Peña-Rosas and Lisa Rogers (WHO Headquarters), for their contributions to the development of the operational guidance and feedback to several draft versions; Adelheid Onyango (WHO African Region) and nutrition focal points in country offices of the WHO Africa and South-East Asia Regions, for providing valuable feedback during the field testing of the operational guidance; Timothy Armstrong, Cynthia Boschi Pinto, Michelle Jane Hindin, Khondkar Rifat Hossain, Richard Johnston, Antonio Montresor, Leanne Riley and Marcus Marcellus Stahlhofer (WHO Headquarters), for their inputs to the development process of various indicators; Gretchen Stevens and Wahyu Mahanani (WHO Headquarters), for their statistical review and technical input to specific indicators; Julia Krasevec and Tom Slaymaker (UNICEF Headquarters), for their involvement in the development of specific indicators and reviewing sections of the document; James Akre (Consultant), for copy-editing; Diana Estevez (Consultant), Fabienne Maertens and Anne Sikanda (WHO Headquarters), for coordinating the publication process and translation into other UN languages.

## **ABBREVIATIONS**

VI

Baby-friendly Hospital Initiative
Body mass index
Breast-milk substitutes
Core Health Indicators
Demographic and Health Surveys
Exclusive breastfeeding
Commission on Ending Childhood Obesity
Global Expanded Monitoring Initiative
Global database on the Implementation of Nutrition Action
Global Nutrition Monitoring Framework
Global Nutrition Policy Review
Health management information systems
International Code Documentation Centre
Iron and folic acid
Joint malnutrition estimates
Joint Monitoring Programme for Water Supply and Sanitation
Low birth weight
Maternal, Newborn, Child and Adolescent Health
Millennium Development Goal
Multiple Indicator Cluster Surveys
Maternal, infant and young child nutrition
National health and nutrition surveys
Noncommunicable diseases
NCD Risk Factor Collaboration
Oral rehydration salts
Oral rehydration therapy
Pan American Health Organization
Sustainable Development Goal
Standard deviation
Scaling Up Nutrition
Technical Expert Advisory group on Nutrition Monitoring
United Nations Children's Fund
United Nations Standing Committee on Nutrition
Vitamin and Mineral Nutrition Information System
World Alliance for Breastfeeding Action
Water, sanitation and hygiene
World Breastfeeding Trends Initiative
World Health Assembly
World Health Organization

## LIST OF TABLES

- **TABLE 1:** Core set of indicators for the Global Nutrition Monitoring Framework.
- **TABLE 2:** Core set of indicators for the Global Nutrition Monitoring Framework and recommended indicators.
- **TABLE A1:** Summary table: Global Nutrition Monitoring Framework indicators for the WHA global nutrition targets, intermediate outcome, process, and policy environment and capacity.
- **TABLE A2:** Haemoglobin adjustment for smokers.
- **TABLE A3:** Haemoglobin adjustments (g/L) for altitude.
- **TABLE A4:** Haemoglobin levels to diagnose anaemia at sea level (g/L).



# BACKGROUND



n 2012, the World Health Assembly (WHA) approved a Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition that identified six global targets related to priority nutrition outcomes to be achieved by 2025 (1). These six global nutrition targets are:



40% GLOBAL REDUCTION IN THE NUMBER OF STUNTED CHILDREN UNDER FIVE



**50% REDUCTION OF** ANAEMIA IN WOMEN OF **REPRODUCTIVE AGE** 



NO INCREASE IN CHILDHOOD **OVERWEIGHT** 



INCREASED RATE OF EXCLUSIVE BREASTFEEDING IN THE FIRST SIX MONTHS TO AT LEAST 50%



30% REDUCTION OF LOW **BIRTH WEIGHT** 



**REDUCED CHILDHOOD** WASTING TO LESS THAN 5%

In 2014, Member States approved the Global Nutrition Monitoring Framework (GNMF) on Maternal, Infant and Young Child Nutrition and the six core outcome indicators to track progress against the six global nutrition targets (Table 1).

In November 2014, the Secretariat proposed fourteen additional core indicators for the GNMF (Table 1) (2, 3). The GNMF includes four types of indicators to monitor pathways towards the global nutrition targets:

- primary outcome indicators that measure the progress towards the six global nutrition targets; (i)
- (ii) intermediate outcome indicators that monitor how specific diseases and conditions on the causal pathways affect national trends relating to the six targets;
- (iii) process indicators that monitor programme and situation-specific progress; and
- (iv) policy environment and capacity indicators that measure the political economy and capability within a country.

The purpose of these additional core indicators is to monitor progress towards the six target outcomes at national and global levels. The core set of indicators includes the six global targets, and five intermediate outcome, six process, and three policy environment and capacity indicators.

In January 2015, the Executive Board endorsed the additional fourteen core indicators, but requested clarifications and further information on their operational aspects. Issues raised included the uniform definitions of the indicator, recommended frequency of data collection, availability of data, operational aspects of data collection and evidence for the validity of the selected indicators.

The Executive Board reviewed the proposal and asked for additional information about the proposed core

indicators. The fourteen indicators are summarized in a March 2015 background paper (4) which was reviewed during an informal consultation with representatives from 43 Member States and several UN agencies (Geneva, 16-17 April 2015). Sixteen indicators were endorsed for immediate use but it was recommended that reporting on four indicators be deferred until 2018 to allow for development of additional operational guidance for Member States (5). These include three process indicators and one policy environment and capacity indicator:

- i. Proportion of children aged 6–23 months who receive a minimum acceptable diet.
- ii. Proportion of pregnant women receiving iron and folic acid supplements.
- iii. Proportion of mothers of children 0–23 months who have received counselling, support or messages on optimal breastfeeding at least once in the previous 12 months.
- iv. Number of trained nutrition professionals per 100 000 population.

WHO and UNICEF established an independent Technical Expert Advisory group on Nutrition Monitoring (TEAM) to advise on enhancing global monitoring of the GNMF indicators. TEAM is also expected to help identify emerging research needs related to nutrition monitoring, and to recommend developing and/or refining GNMF indicators and methods. TEAM has been tasked to provide technical advice on further development and validation of the four deferred indicators and to complete related monitoring and reporting guidelines. Table 2 presents the list of original indicators and the TEAM recommendations for the four deferred indicators and diarrhoea indicator.

#### **1.1 OBJECTIVES OF THE GNMF**

The objectives of GNMF (6) are: (i) to monitor progress towards the achievement of the six global targets (for use at global and national levels); (ii) to track implementation of selected programmes required to achieve the global targets (for use at global and national level); and (iii) to track implementation of all programmes required to achieve national targets (for use at national and at subnational levels).

<b>TABLE 1:</b> Core set of indicators for the Global Nutrition Monitoring Framework	TABLE 1:	Core set	of indicators	for the Globa	<b>Nutrition</b>	<b>Monitoring Frame</b>	ework
--	----------	----------	---------------	---------------	------------------	-------------------------	-------

	Indicator	Indicator type	Abbreviated name	
Pri	mary outcome indicators for the six global nutrition targets			
1	Prevalence of low height-for-age in children under five years of age	WHA target	Target 1	
2	Prevalence of haemoglobin <11 g/dL in pregnant women Prevalence of haemoglobin <12 g/dL in non-pregnant women	WHA target	Target 2	
3	Prevalence of infants born <2500 g	WHA target	Target 3	
4	Prevalence of weight-for-height >+2 SD in children under five years of age	WHA target	Target 4	
5	Prevalence of exclusive breastfeeding in infants aged six months or less	WHA target	Target 5	
6	Prevalence of low weight-for-height in children under five years of age	WHA target	Target 6	
Inte	Intermediate outcome indicators			
7	Prevalence of diarrhoea in children under 5 years of age	Intermediate outcome	IO1	
8	Proportion of women aged 15–49 years with low body mass index (<18.5 kg/m²)	Intermediate outcome	102	
9	Number of births during a given reference period to women aged 15–19 years /1000 females aged 15–19 years	Intermediate outcome	103	
10	Proportion of overweight and obese women 18+ years of age (body mass index $\ge$ 25 kg/m <sup>2</sup> )	Intermediate outcome	104	
11	Proportion of overweight in school-age children and adolescents 5–19 years (BMI-for-age >+1 SD)	Intermediate outcome	105	

	Indicator	Indicator type	Abbreviated name			
Pro	Process indicators					
12	Proportion of children aged 6–23 months who receive a minimum acceptable diet	Process	PR1			
13	Proportion of population using safely managed drinking services	Process	PR2			
14	Proportion of population using safely managed sanitation services	Process	PR3			
15	Proportion of pregnant women receiving iron and folic acid supplements	Process	PR4			
16	Percentage of births in baby-friendly facilities	Process	PR5			
17	Proportion of mothers of children 0–23 months who have received counselling, support or messages on optimal breastfeeding at least once in the previous 12 months	Process	PR6			
Pol	cy environment and capacity indicators					
18	Number of trained nutrition professionals/100,000 population	Policy and capacity	PE1			
19	Number of countries with legislation/regulations fully implementing the International Code of Marketing of Breast-milk Substitutes (resolution WHA34.22) and subsequent relevant World Health Assembly resolutions	Policy and capacity	PE2			
20	Number of countries with maternity protection laws or regulations in place	Policy and capacity	PE3			

TABLE 2: Core set of indicators for the Global Nutrition Monitoring Framework and the TEAM recommended indicators

Indicator type	Original indicators	Recommended indicators
101	Prevalence of diarrhoea in children under 5 years of age	Children under 5 years of age with diarrhoea receiving oral rehydration solution (ORS)
PR1	Proportion of children aged 6–23 months who receive a minimum acceptable diet	Minimum dietary diversity (MDD) for children aged 6–23 months
PR4	Proportion of pregnant women receiving iron and folic acid supplements	Any antenatal iron supplementation
PR6	Proportion of mothers of children 0–23 months who have received counselling, support or messages on optimal breastfeeding at least once in the previous 12 months	Availability of national-level provision for breastfeeding counselling services in public health and/or nutrition programmes
PE1	Number of trained nutrition professionals/100,000 population	Nutrition professionals density

## 1.2 VISION FOR ESTABLISHMENT OF NATIONAL HEALTH DATA SYSTEMS

The World Health Assembly resolution urges Member States to put the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition into practice by including relevant evidence-based nutrition interventions in maternal, child and adolescent health services (7). Member States can design national nutrition interventions based on specific epidemiological patterns and programme decisions. National nutrition interventions should ensure establishment and engagement of policies in other sectors to improve nutrition. Member States should have in place national surveillance systems to monitor programme implementation and progress in improving nutritional status.

The GNMF, which was developed to support Member States in implementing the Comprehensive Implementation Plan, provides a harmonized and internationally accepted approach to monitoring progress towards achieving global nutrition targets. All Member States were expected to report on the 20 core indicators beginning in 2016. To this end, all Member States require a continuous flow of relevant high-quality data. Many Member States either do not have such data or do not have data that are comparable across countries. Robust national nutrition surveillance systems are essential to tracking progress in achieving global nutrition targets.

Chapter 1 of this operational guidance includes background information on the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition and GNMF indicators. Chapter 2 describes the rationale for including these indicators in the GNMF. Chapter 3 provides a detailed description of technical aspects for measuring indicators of the six global nutrition targets. Chapter 4 presents guidance for implementing the intermediate outcome, process, and policy environment and capacity indicators.



GLOBAL NUTRITION MONITORING FRAMEWORK OPERATIONAL GUIDANCE FOR TRACKING PROGRESS IN MEETING TARGETS FOR 2025

# RATIONALE FOR THE GNMF INDICATORS



G lobal nutrition challenges are multidimensional and complex. UNICEF's child growth conceptual framework illustrates that the two most significant immediate causes of malnutrition are inadequate dietary intake and illness (8). The underlying causes of inadequate dietary intake and illness are insufficient access to food, inadequate maternal and child care practices and health services, and poor drinking water, sanitation and hygiene. For good health, it is essential to ensure access to affordable and high quality curative and preventive health services. The basic causes of child malnutrition include inadequate economic development and political commitment for effective policies to ensure an enabling environment for good nutrition.

The GNMF considers the multisectoral nature of nutrition and includes indicators relating to underlying causes of malnutrition and broader policies or actions, including access to health services and policies outside the health sector. The GNMF indicators are selected taking into consideration other intersectoral initiatives with common determinants, and include markers of nutrition outcomes, implementation of nutrition programmes, and the policy environment. The GNMF encompasses six global targets, which are the *primary outcome* indicators. The framework also includes *intermediate outcome*, *process* and *policy environment and capacity* indicators that can influence either directly in the pathways of one or more primary outcome indicators or can influence them indirectly.

For most GNMF indicators, databases exit that serve as a pool from which the GNMF will assemble data. At the same time, these databases function as a standardization mechanism and quality check. They rely on good quality data collection in countries, either through surveys or surveillance systems.

#### Criteria for selecting additional core indicators

The following criteria were used for selecting additional core indicators:

- **a.** The indicator is relevant for the pathway to the achievement of one or more global target;
- b. the indicator has been validated;
- c. there are surveillance systems or other data collection instruments that allow a baseline to be set and changes to be monitored over time;
- **d.** the indicator is either currently collected in most countries or could be added to the current infrastructure at minimal cost; and
- e. there is country capacity to monitor indicators (including data generation, compilation and sharing, quality assessment, analysis and synthesis, and communication of results).

#### 2.1 RATIONALE FOR WHA GLOBAL TARGETS

World Health Assembly global targets for six nutrition indicators have received increased attention since the approval of the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition in 2012. The global nutrition targets endorsed by the World Health Assembly in resolution WHA65.6 have been widely adopted by many global initiatives, including the Scaling Up Nutrition (SUN) movement and the strategies of several donors. This section describes the status of the six global nutrition targets as the rationale of including these indicators in the GNMF.

Childhood stunting is still very high. Stunting can result from slow intrauterine and postpartum growth resulting in a failure to achieve expected length as compared to healthy, well-nourished children of the same age. As stunting is an indicator of past growth failure, it is associated with several long-term factors including chronic insufficient nutrient intake, frequent infection, continued inappropriate feeding practices and poverty. The effects of these long-term factors may not be reversible in children over 2 years of age.

The global prevalence of childhood stunting and the total number of stunted children less than 5 years of age are decreasing. Between 2000 and 2016, stunting prevalence declined from 32.7% to 22.9% and the number declined from 198.4 million to 154.8 million (9). The reduction in stunting has varied from region to region. In Asia, there are still 86.5 million stunted children with 61.2 million stunted in southern Asia. The number of stunted children in Africa increased from 50.4 million to 59 million between 2000 and 2016.

Anaemia among women of reproductive age is a global public health problem affecting most lowand middle-income countries as well as many highincome countries. Anaemia has significant adverse health consequences, as well as an adverse impact on social and economic development. Although anaemia has several causes, the most common and significant is iron deficiency, which accounts for approximately 50% of cases. When iron deficiency anaemia occurs in pregnancy, it may be associated with increased risk of low birth weight (10) and maternal and perinatal mortality (11). The prevalence of anaemia in women of reproductive age was 29% in 2011, affecting 32 million pregnant women and 496 million non-pregnant women of child-bearing age (15–49 years) (12). The highest rates were in central and west Africa and south Asia. These figures are updated estimates of the baseline level for this target that had previously been calculated for the period 1993–2005: 41.8% for pregnant women and 30% for non-pregnant women.

World Health Assembly global targets for six nutrition indicators have received increased attention since the approval of the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition in 2012

Overall, it is estimated that 15% to 20% of all births worldwide are low birth weight, or more than 20 million births a year (13). Regional estimates show that the rates of low birth weight are 28% in south Asia, 13% in sub-Saharan Africa and 9% in Latin America.

In Bangladesh and India, where around half the world's children with low birth weight are born, the prevalence of low birth weight decreased from 30.0% to 21.6% (between 1998 and 2006) and from 30.4% to 28.0% (between 1999 and 2005), respectively. There has been a reduction in the prevalence of low birth weight in El Salvador (from 13% to 7% between 1998 and 2003), South Africa (15.1% to 9.9% from 1998 to 2003), and the United Republic of Tanzania (from 13.0% to 9.5% between 1999 and 2005). The higher reduction rates have been observed in countries where a large proportion of low birth weight is the result of intrauterine growth

retardation, which is more amenable to reduction than preterm birth (1).

Globally, overweight prevalence among children less than 5 years of age has gone up from 5% to 6% between 2000 and 2016 (9). The total number of overweight children has also risen from 30.4 to 40.6 million for the same period. The number of overweight children is increasing in all regions. In 2016, almost half of all overweight children under 5 years of age lived in Asia and one quarter lived in Africa.

Globally, only 43% of children less than 6 months of age were exclusively breastfed in 2016 (14). The rates of exclusively breastfed infants were higher in the South Asia (59%) and Eastern Africa (57%). It is much lower in Latin America and the Caribbean (33%), Eastern Asia (28%), Western Africa (25%) and Western Asia (21%). There were insufficient data to calculate a regional average for Europe, North America and Oceania. Improvements in breastfeeding behaviours and practices can also impact mortality due to wasting and diarrhoea (15).

In 2016, 51.7 million children less than 5 years of age were wasted with a prevalence rate of 7.7% (9). Almost all wasted children lived in Asia (35.9 million) and Africa (14.0 million) with the highest proportion of children under 5 years of age suffering from wasting live in Asia (69%). More than half of all wasted children less than 5 years of age live in South Asia.

Relative to the 2012 baseline, estimates of global progress to 2025 on five of the six global nutrition targets global progress are not on track, with data on low birth weight unavailable. For stunting, the current rate of reduction is not rapid enough to attain 100 million by 2025 (16). Similarly, for wasting, the current rate of reduction is not rapid enough to reach below 5% by 2025. For overweight, the 2012 baseline was 6% in the Joint Malnutrition Estimates (JME) 2017, and the current rate indicates rise in overweight in Africa and Asia. For anaemia, the global average of the prevalence in women of reproductive age increased from 30.3% (2012 baseline) to 32.8% in 2016 (14). For low birth weight, estimating methods are being revised. For exclusive breastfeeding, it is difficult to compare exclusive breastfeeding estimates from different methodologies as in most highincome countries exclusive breastfeeding is measured by retrospective recall of mothers/caregivers instead of using standardized previous day recall. Work is in progress to produce harmonized estimates based on different methodologies.

## 2.2 RATIONALE FOR INTERMEDIATE OUTCOME INDICATORS

As noted above, the GNMF also includes *intermediate outcome* indicators that can be either directly in the pathways of one or more main outcome indicators or can influence them indirectly. The six global targets are affected by diseases and conditions that can be monitored through intermediate outcome indicators.

Diarrhoea has a direct impact on wasting and stunting (17) and is an important cause of the vicious circle of undernutrition-infection. On the other hand, morbidity and mortality from childhood diarrhoea can be significantly reduced through breastfeeding (15). Thus, improvements in breastfeeding practices and prevention of diarrhoea can have an enormous impact on reducing childhood stunting and wasting.

Maternal undernutrition is a key contributor to poor fetal growth, low birth weight (LBW), and shortand long-term infant morbidity and mortality (18). Women who are underweight (low BMI <18.5 kg/m<sup>2</sup>) are more likely to have babies with low birthweight due to intrauterine growth retardation, which increases the risk of neonatal mortality and future stunting (19). In most countries, maternal BMI of less than 18.5 kg/m<sup>2</sup> ranges from 10% to 19% (18). This magnitude of maternal underweight is even higher (more than 20%) in most countries in sub-Saharan Africa, southcentral and south-eastern Asia, and Yemen. The situation is considered critical in Bangladesh, Eritrea and India with a prevalence of low maternal BMI around 40%. Preventing maternal undernutrition can play a significant role in preventing negative birth outcomes and stunting later in childhood.

The adolescent birth rate, also known as the age-specific fertility rate, provides a basic measure of reproductive health in a vulnerable group of adolescent women. Consequences of early pregnancy can include morbidity and mortality due to limited access to skilled antenatal, childbirth and postnatal care, and unsafe abortions. Young adolescent mothers, who are more likely to experience complications during pregnancy and childbirth than adult women, are at greater risk of mortality. The infants born of adolescent mothers are also at higher risk of morbidity and mortality. In a multicountry study in Africa, Asia, and Latin America, low maternal age had a negative impact on child length from 0 to 11 months of age, and poorer growth in children of younger mothers continued after 24 months of age (20). Therefore, preventing births very early in a woman's

reproductive life is important for improving maternal health and reducing infant mortality.

Maternal overweight and obesity result in increased maternal morbidity and infant mortality (21). Maternal overweight is also associated with overweight and metabolic syndrome in children (22-24). In some developed country settings, maternal obesity is also associated with delayed lactogenesis and short breastfeeding duration (25). Obesity in women can increase health risks for both the mother and child during and after pregnancy. Evidence suggests that there is a significant increased risk of a wide variety of pregnancy, birth, and neonatal complications in overweight, obese, and severely obese women (25, 26). Since many countries are experiencing nutrition transition, prevention of maternal overweight can prevent overweight and other chronic diseases in children.

Childhood obesity has both immediate and longterm effects on health and well-being. Obesity can affect a child's immediate health, educational attainment and quality of life. Children with obesity are very likely to remain obese as adults and are at risk of chronic illness. Obese children and adolescents are more likely to develop cardiovascular diseases such as high cholesterol and high blood pressure, and diabetes (*27, 28*). Obese children and adolescents are at greater risk for bone and joint problems, sleep apnoea, and social and psychological problems such as stigmatization and poor self-esteem (*27, 29*). Thus, prevention of obesity during childhood is important for promoting health and wellbeing both during childhood and later in life.

#### 2.3 RATIONALE FOR PROCESS INDICATORS

The six global targets can also be affected by programmes that can be monitored through process indicators.

It has been suggested that, in addition to disease prevention strategies, complementary feeding interventions targeting this "critical window" are most efficient in reducing malnutrition and promoting adequate growth and development (*30*). Complementary feeding should be timely, adequate and appropriate (*31*), which means that infants should start receiving foods in addition to breast milk from 6 months onwards, that these foods should fulfil the nutritional needs of a rapidly growing child, and that diverse foods should be given in sufficient quantity. A comprehensive systematic review of the efficacy and effectiveness of complementary feeding interventions in low- and middle-income



countries revealed that educational interventions that stress feeding nutrient-rich animal-source foods may be more effective in terms of child growth compared with general educational messages (*32*). In areas with high levels of food insecurity, complementary feeding interventions that provide food in addition to education seem to be more effective for improving child growth outcomes (*33*).

Improved drinking water sources and improved sanitation and hygiene also impact diarrhoea (34). Safe drinking services, which include both a household connection and covered wells and bore holes, can contribute to preventing diarrhoea, which can have an impact on stunting and wasting. Improved sanitation and hygiene also help to prevent diarrhoea and thereby reduce stunting. A systematic analysis also showed an association between use of improved drinking water and sanitation facilities and reduced childhood stunting (35).

Iron and folic acid supplementation can decrease the risk of maternal anaemia and neural tube defects in offspring. Iron-folic acid supplementation of pregnant women increases haemoglobin levels in low-, middleand high-income countries (*36*). The global prevalence of maternal anaemia could be reduced by one-third to onehalf over a decade if action were taken to launch focused, large-scale programmes.

A recent systematic review examined the global impact of the Baby-friendly Hospital Initiative (BFHI) on breastfeeding and child health outcomes (*37*). Key findings showed that adherence to the BFHI Ten Steps has a positive impact on breastfeeding outcomes; there

was a dose-response relationship between the number of BFHI steps women were exposed to and the likelihood of improved early initiation of breastfeeding, exclusive breastfeeding and any breastfeeding. As in most lowincome settings a significant proportion of births takes place either at home or in health centres with inadequate facilities. Thus, ensuring that births take place at babyfriendly facilities can significantly improve breastfeeding outcomes.

Counselling plays a significant role in improving infant and young child feeding (IYCF) practices. A large body of literature suggests a positive impact of counselling by peer counsellors (*38*) and trained health workers in improving feeding practices and nutritional status of infant and young children (*39, 40*). Intensive counselling by frontline health workers significantly improved breastfeeding practices in Bangladesh and Viet Nam (*39*) and complementary feeding practices in Bangladesh (*40*).

### 2.4 RATIONALE FOR POLICY ENVIRONMENT AND CAPACITY INDICATORS

A systematic review showed that health worker training in nutrition improved daily energy intake of children, feeding frequency and dietary diversity during a critical window of opportunity (6–24 months of age) (41). In rural Bangladesh, intensive training of frontline health workers in IYCF significantly improved health workers' knowledge of IYCF, quality of counselling, and maternal IYCF knowledge and practices (42). Trained community health workers also had improved skills in nutrition counselling and management of child undernutrition. Training, both pre-service and in-service, has a high potential for improving the knowledge of nutrition and the quality of services health/nutrition workers deliver. Little progress in increasing breastfeeding rates is seen in the absence of provisions giving effect to the International Code of Marketing Breast-milk Substitutes (43). However, the establishment of legislation is necessary but insufficient to ensure breastfeeding; it should be complemented by adequate implementation and monitoring mechanisms (44). All stakeholders have a role to play in creating an enabling environment for improved infant and young child feeding practices through advocacy dialogue, and policy formulation and implementation.

Returning to work after maternity leave has been identified as a significant cause for never starting breastfeeding or its early cessation (45–47). In most low- and middle-income countries, maternity leave is limited to formal-sector employment and is not always provided in practice (48, 49). In Canada, a reform which extended maternity leave from 6 months to 1 year increased mean duration of breastfeeding by 10 days for every additional month not at work (50). It is important to ensure that all countries have properly implemented maternity protection laws to protect and promote breastfeeding. Ensuring that births take place at baby-friendly facilities can significantly improve breastfeeding outcomes

## DETAILED GUIDANCE ON INDICATORS FOR THE SIX WHA GLOBALTARGETS

onitoring global nutrition targets nationally requires nationally representative indicators of the target population. It is important that countries have baseline estimates, collect/produce intermediate nationally representative estimates, and plan for a final assessment in 2025. Standard data collection methods should be used to allow for comparability within countries over time and between countries.

At present, availability of information depends mainly on repeated national surveys, carried out by national agencies, often together with Demographic and Health Surveys (DHS), or UNICEF's Multiple Indicator Cluster Surveys (MICS) and possibly other data collection systems. Surveys are usually representative and are carried out at roughly four or five year intervals.



### **3.1 STUNTING IN CHILDREN UNDER FIVE YEARS OF AGE**

### **GLOBAL TARGET 1**

By 2025, a 40% reduction globally of the number of children under five who are stunted



**Stunting** is a sign of past or chronic undernutrition and cannot measure short-term changes in undernutrition. For children less than 2 years of age, the index is low length-for-age, and for children 2 years and above, the index is referred to as height-for-age. A deficit in length-for-age or height-for-age is referred to as stunting.

Global nutrition target 1 means a relative reduction, by 2025, of 40% of the total number of children stunted compared to the 2012 baseline. This would translate into a 3.9% relative reduction per year between 2012 and 2025, i.e. reducing the number of stunted children from the 165 million in 2012 to approximately 100 million (1). Globally, the prevalence of stunting fell from 29.5% to 22.9% between 2005 and 2016 (14). However, even if the current trend continues, there would be 30 million stunted children above the global WHA target by 2025.

Indicator name	Children under 5 years who are stunted (moderate and severe).		
Definition	Percentage of stunted (moderate and severe) children aged 0–59 months (moderate stunting = length/height-for-age between <-2 and >-3 SD of the WHO Child Growth Standards median; severe stunting = height-for-age below -3 SD of the WHO Child Growth Standards median) x under-five population at the time of the survey.		
METHOD OF ESTIMATION			
Numerator	Number of children aged 0–59 months <sup>1</sup> who were stunted.		
Denominator	Total number of children aged 0–59 months who were measured.		
Percent of stunted	Children aged 0–59 months who are stunted for age <pre>children = *100</pre>		
	Total number of children aged 0–59 months who were measured		
Data availability	availability Since 1989, WHO maintains the Global Database on Child Growth and Malnutrition (availab at: <u>http://www.who.int/nutgrowthdb/en/</u> ). This global database aggregates population-bas surveys that include anthropometric measurements of representative samples of children less th 5 years of age.		
Data sources	Main sources of data are population-based household surveys with anthropometry and nutrition surveillance systems.		
Data quality	ity Population-based surveys that fulfil a set of criteria. Data are checked for validity consistency and raw data sets are analysed according to a standard procedure to ol comparable results. The main criteria for including surveys in the database are: (i) a def population-based sampling frame; (ii) a probabilistic sampling procedure involvin least 400 children; (iii) use of standard anthropometric measurement techniques; and presentation of results in z-scores in relation to the WHO child growth standards.		
	To facilitate re-running of nutritional survey data, WHO recommends using either the new softw. WHO Anthro or the statistical macros. Both can be downloaded together with manuals and Read files (available at: <u>http://www.who.int/childgrowth/software/en/</u> ). The WHO Anthro "Nutritic survey" software module enables analysis of existing data sets. The macros are available for SF SAS, STATA and S-Plus; And they are particularly recommended for analysis of large survey data s Both the software and the macros allow the user to produce result tables in the standard data-er format ready for submission to the Global Database.	lme onal PSS, sets.	
Frequency of data collection	Every 3–5 years.		
Guidance for anthropometric data collection	Determination of a child's age is the first and most important step in anthropometric assessment. Accurate age is required for sampling whether a child should be included in the survey and to determine whether a child's recumbent length or standing height should be measured. A child's age plays a role when deriving correct z-scores for age-related indicators (the WHO growth standards are expressed in units of days).		
Length/heigh	Recumbent length should be measured for children less than 24 months of age and standing height should be measured for children 24 months and above. Detailed descriptions on length/ height board, training and standardization procedures for anthropometry and essential steps of measurements are presented in Annex 2. For further details on anthropometric measurements, see also the WHO Training Course on Child Growth Assessment ( <i>51, 52</i> ) and Cogill 2003 ( <i>53</i> ).		
<b>Guidance on reporting</b> Prevalence of stunting in children less than 5 years of age should be presented for sample and disaggregated by age, sex, place of residence, region, socioeconor and mothers' education. It is useful to present stunting data by severity – moderat between <-2 and >-3 SD) and severe (z-score below -3 SD).			

<sup>&</sup>lt;sup>1</sup> Age ranges are presented as completed months, i. e., 0–5 months is 0–5.999 months, 0–59 months is 0–59.999 months etc.



### **3.2 ANAEMIA IN WOMEN OF REPRODUCTIVE AGE**

### **GLOBAL TARGET 2**

By 2025, a 50% reduction of anaemia in women of reproductive age



**Anaemia** is defined as low blood haemoglobin concentration (<110 g/L in pregnant women and <120 g/L in non-pregnant women aged 15–49 years) (*54, 55*).

The global nutrition target 2 implies a relative reduction of 50% of the number of women of reproductive age (15–49 years) with anaemia by 2025, compared to the 2012 baseline of 30.3% (1). This would translate into a 5.3% relative annual reduction between 2012 and 2025 and implies reducing the number of anaemic women of reproductive age to approximately 230 million. Several countries have demonstrated a reduction in anaemia prevalence in women of reproductive age, as indicated by repeated national surveys included in the 6<sup>th</sup> report on the world nutrition situation of the United Nations Standing Committee on Nutrition (*56*). These estimates point to a 4% to 8% relative reduction per year.

Indicator name	Anaemia prevalence in women of reproductive age
	Anaemia is defined as haemoglobin level <110 g/L in pregnant women aged 15–49 years. For non-pregnant and lactating women, the haemoglobin cut-off for anaemia is <120 g/L. The indicator captures both pregnant and non-pregnant women in the reproductive age of 15–49 years.
	<ul> <li>Prevalence of haemoglobin &lt;110 g/L in pregnant women aged 15–49 years.</li> </ul>
	<ul> <li>Prevalence of haemoglobin &lt;120 g/L in non-pregnant women aged 15–49 years.</li> </ul>
	Percentage of women aged 15–49 years with a haemoglobin level less than 120 g/L for non- pregnant women and lactating women, and less than 110 g/L for pregnant women, adjusted for altitude and smoking.
METHOD OF ESTIMATION	
	Number of women aged 15–49 years with haemoglobin levels below the indicated cut-off, adjusted for altitude and smoking.
Denominator	Total number of women aged 15–49 years with haemoglobin levels assessed.
For pregnant women	
Prevalence of anaemia	Number of pregnant women 15–49 years with haemoglobin <110 g/L
Frevalence of anaemia	Total number of pregnant women 15–49 years with haemoglobin levels assessed

For non-pregnant women	
Prevalence of anaemia	Number of pregnant women 15–49 years with haemoglobin <120 g/L =
	Total number of pregnant women 15–49 years with haemoglobin levels assessed
Haemoglobin adjustment procedures	Haemoglobin status should be adjusted for smokers and people living at high altitud ( <i>57</i> ). Haemoglobin concentration increases in smokers and should be adjusted to avoir underestimating anaemia among smokers. Similarly, haemoglobin concentrations of people living more than 1000 m above sea level should be adjusted downwards to avoir underestimating anaemia prevalence. Detailed descriptions of adjustment procedures for the haemoglobin level of smokers and people living at high altitude are presented in Annex 3.
Data availability	The WHO Vitamin and Mineral Nutrition Information System (VMNIS) includes data by country on the prevalence of anaemia and mean haemoglobin concentrations (available at: <a href="http://www.who.int/vmnis/en/">http://www.who.int/vmnis/en/</a> ). It also contains the sources of anaemia data and inclusion criteria for the anaemia database. Data are identified via periodic MEDLINE searches and an international collaborative network, which uncovers data sources not routinely reported. Studies or survey are included in the WHO database if there is a defined population-based sampling frame probabilistic sampling procedures are used, and sample size is at least 100 individuals (58).
Data sources	Population-based household surveys with haemoglobin estimates of women of reproductive ag 15–49 years. Data sources and inclusion criteria for the database on anaemia are described in Annex 3
Data quality	The WHO VMNIS has a set of inclusion criteria for anaemia data. When a potentially relevant survey is identified and the full report obtained, data are checked for consistency as part of routine quality control. If required, data holders are contacted for clarification or to obtait additional results. Available information is extracted and entered into a standard data form.
Frequency of data collection	Every 3–5 years.
Guidance for data collection	Haemoglobin estimation
	Most population-based surveys in recent decades have used a portable haemoglobinometer (e.g., HemoCue) for estimating haemoglobin ( <i>59</i> ). Haemoglobin can be measured this way for women of reproductive age (15–49 years) during household surveys. Using haemoglobinometer to measure haemoglobin concentration has several advantages over use of haematocrit for field surveys and is far more accurate than clinical examination particularly in terms of sensitivity <sup>2</sup> . Systematic errors resulting from insufficient training of the field surveys and is far more accurate than clinical examination.
	based estimates of anaemia prevalence. Adequate and uniform training of field personnel i using the haemoglobinometer is thus of utmost importance. Since many countries lack nationally representative surveys measuring haemoglobin modelled estimates of anaemia prevalence are being used for monitoring achievement of global anaemia targets. The development of modelling trends in haemoglobin distribution has been described elsewhere ( <i>58</i> ). For modelling, the surveys are included if blood haemoglobin is measured, anaemia or mean haemoglobin for women of reproductive age is recorded, probabilistic sampling procedure with a defined sampling frame is used, and the sample siz is at least 100 individuals. The modelling uses data for women of reproductive age group of
	Since many countries lack nationally representative surveys measuring haemoglobin modelled estimates of anaemia prevalence are being used for monitoring achievement of global anaemia targets. The development of modelling trends in haemoglobin distribution habeen described elsewhere ( <i>58</i> ). For modelling, the surveys are included if blood haemoglobi is measured, anaemia or mean haemoglobin for women of reproductive age is recorded, probabilistic sampling procedure with a defined sampling frame is used, and the sample siz is at least 100 individuals. The modelling uses data for women of reproductive age group of 15–49 years and excludes haemoglobin measurements that are <25 g/L and >200 g/L. A

<sup>2</sup> Sensitivity refers to the proportion of survey subjects who are accurately diagnosed as anaemic using a method (true positives) among the survey subjects who are anaemic (true positives and false negatives).

Guidance on reporting	Anaemia data should be presented disaggregated by age, education level, place of residence, region, reproductive status (pregnant, lactating), and socioeconomic status (wealth quintile).
	For reporting purposes on anaemia among women of reproductive age, countries should use the WHO recommended haemoglobin cut-offs for anaemia for estimating the national prevalence of anaemia even if a different local reference is used. The haemoglobin cut-off for pregnant and non-pregnant women aged 15–49 years is <110 g/L and <120 g/L, respectively. The haemoglobin results should be adjusted for altitude and cigarette smoking using standard methods described in Annex 3.
	It is recommended to report on anaemia prevalence by severity. For non-pregnant women, the haemoglobin cut-offs for defining severity of anaemia are mild (110–119 g/L), moderate (80–109 g/L) and severe (<80 g/L). Haemoglobin levels of mild, moderate and severe anaemia for pregnant women are presented in Annex 3, Table A4.
	Some countries may have a different range for "women of reproductive age", such as 15–44 years. For reporting prevalence of anaemia to WHO, the exact age group assessed should be provided. The prevalence of anaemia in the target group should be from nationally representative household-based cross-sectional surveys. In general, healthy non-pregnant women of reproductive age do not have healthy clinic visits and therefore clinic-based surveys are unlikely to be representative of all women in this target group. Some surveys may only include non-pregnant women who have one or more children less than 5 years of age. This is not a representative sample of all non-pregnant women of reproductive age.
	Haemoglobin levels less than 80 g/L for non-pregnant women and lactating women, and less than 70 g/L for pregnant women (severe anaemia) should be reported.

#### **ANAEMIA GLOBAL PREVALENCE (%) (ALL WOMEN)**



GLOBAL NUTRITION MONITORING FRAMEWORK OPERATIONAL GUIDANCE FOR TRACKING PROGRESS IN MEETING TARGETS FOR 2025



### **3.3 LOW BIRTH WEIGHT**

### **GLOBAL TARGET 3**

A 30% reduction in low birth weight by 2025



**Low birth weight**, which continues to be a significant public health problem globally, is associated with a range of short- and long-term consequences. The prevalence of low birth weight varies widely across and within countries. Low birth weight is most common in low- and middle-income countries, particularly among the most vulnerable populations. Since a significant proportion of deliveries in low-income countries occur in homes or small health facilities, they go unreported in official figures. This may result in an underestimation of the prevalence of low birth weight. Despite limited and unreliable data on low birth weight, it should be emphasized that rates are very high.

The global nutrition target 3 is a relative reduction of 30% of infants born with a weight lower than 2500 g by the year 2025. This would translate into a 2.7% relative reduction per year between 2012 and 2025 (*60*).

Indicator name	Incidence of low birth weight among new-borns
Definition	The incidence of low birth weight in a population is defined as the percentage of live birt under 2500 g out of the total number of live births during the same period. WHO defines lo birth weight as less than 2500 g (5.5 lb) ( <i>61</i> ).
METHOD OF ESTIMATION	
Numerator	Number of live-born neonates with weight less than 2500 g at birth.
Denominator	Total number of live births.
	Number of live born babies with birth weight less than 2,500 g in a year
Low birth weight in	cidence rate = *100 *100
Adjustment procedures	Survey data on low birth weight are limited since most infants in low-income countries a born at home and not weighed at birth. However, various methods have been develope to adjust for this problem and establish national estimates ( <i>62</i> ). A detailed description of the adjustment procedures for low birth weight data is presented in Annex 4.
Data availability	UNICEF maintains a global database (available at: <a href="http://data.unicef.org/topic/nutrition/log_birthweight/">http://data.unicef.org/topic/nutrition/log_birthweight/</a> ) in which adjustments are made using survey data, mainly DHS and the MIC Administrative estimates are used where the percentage of weighed neonates is high.

Data sources	Delivery registers (hospital management and information systems – HMIS). This method provides data on the incidence of low birth weight among neonates delivered in health facilities. Population-based household surveys, which collect data on birth weight and the relative size of neonates at birth, allow for an adjusted value even where many infants are no weighed at birth. Other possible data sources include routine facility information systems.
	For high-income countries, the main sources of information on low birth weight are service based data and national birth registration systems. For low- and middle-income countries low birth weight estimates are primarily derived from national household surveys and routing reporting systems.
	Before 1990, most low birth weight estimates for low-income countries were based or facility data. These estimates were biased in most low-income countries since most birth did not take place at health facilities. Moreover, those occurring at health facilities were select sample of all births. Since 1990, as an alternative to facility-based data, information on birth weight is being systematically collected from mothers participating in nationally representative household surveys (DHS and MICS).
Frequency of data collection	Continuous.
Guidance for data collection	Accurate weighing depends on regularly calibrated scales, with a measurement accurace of at least 10 g, and the correct reading technique. Digit preference is frequently observed in birth-weight data, especially around 500 g values. Heaping at these values can affect the estimation of incidence of low birth weight in the population. Digit preference can only improve by regularly analysing and presenting data to those who weigh babies. Rounding up and down is very common when using weighing scales. This not only produces an inaccurate measurement for individual babies, but it may also distort the reported low-birth-weigh rates in the population. See UNICEF and WHO 2004 for details ( <i>63</i> ).
	Babies should be weighed within 24 hours of birth (ideally, within 12 hours to avoid weigh reduction due to water loss) (64). The actual weight of infant should be recorded to the degree of accuracy to which it is measured. While statistical tabulations may include 500 g grouping for birth weight, the weight of the individual infant should be recorded as exact weight.
Guidance on reporting	Nationally disaggregated data should be presented by sex, place of residence, region gestational age (preterm status), socioeconomic status (wealth quintile) and mother education.
	WHO recommends 500 g as the lower reporting limit. Since the definition concerns only live births, it is strongly recommended that estimates be expressed as a proportion of live births
	Data can be tabulated either as a percentage of infants weighing less than 2500 g, or furthe divided as very low birth weight (less than 1500 g) or extremely low birth weight (less than 1000 g). These categories are not mutually exclusive. If presented in 500 g categories, the should be 500–999 g, 1000–1499 g, 1500–1999 g, etc. Please see UNICEF and WHO 2004 for further details ( <i>63</i> ).

22)



### **3.4 OVERWEIGHT IN CHILDREN UNDER FIVE YEARS OF AGE**

### **GLOBAL TARGET 4**

By 2025, no increase in childhood overweight



**Overweight** in children is reaching alarming proportions in many countries and poses an urgent and serious challenge. The prevalence of overweight among children is rapidly increasing even in many low- and middle-income countries. In 2016, at least 40.6 million children less than 5 years of age were overweight or obese, and most of them live in low- and middle-income countries (9). Progress in tackling childhood obesity has been slow and inconsistent.

The Commission on Ending Childhood Obesity (ECHO) was established in 2014 to review, build upon and address gaps in existing mandates and strategies. In January 2016, ECHO presented its final report to the Director General of WHO during the 138th session of the WHO Executive Board (*65, 66*). The ECHO report draws attention to the alarming rise of childhood obesity and the serious threat it poses to the health of children and adults. After consulting with over 100 WHO Member States, the Commission developed a set of recommendations for tackling childhood and adolescent obesity in various contexts.

Global target 4 implies that the estimated prevalence of childhood overweight (6%) in 2012 should not increase by 2025 (9). However, the global trend shows a slow but steady increase, with more rapid increases in countries with rapidly expanding food systems, for example in North Africa. National and regional data from high-income countries indicate that higher socioeconomic groups have a lower increase in childhood obesity. There is little programmatic experience in low- and middle-income countries. Programmes aimed at curbing childhood obesity have mainly targeted school-age children (1). Special attention should be given to preventing childhood overweight where efforts are being made to reduce stunting.

Indicator name	Children aged under 5 years who are overweight.
Definition	Prevalence of weight-for-height in children aged 0–59 months defined as above +2 SD of the WHO Child Growth Standards median.
METHOD OF ESTIMATION	
Numerator	Number of children aged 0–59 months who are overweight.
Denominator	Total number of children aged 0–59 months who were measured.
Prevalence of over	Number of children aged 0–59 months who are overweight weight =
	Total number of children aged 0–59 months who were measured
Data availability	Since 1989, WHO maintains the Global Database on Child Growth and Malnutrition, which includes population-based surveys that fulfil a set of criteria. Data are checked for validity and consistency and raw data-sets are analysed according to a standard procedure to obtain comparable results. Prevalence above defined cut-off points for weight-for-height and BMI-for-age in pre-school children are presented using z-scores based on the WHO Child Growth Standards. See the section on stunting for data availability and quality, which are the same for overweight.
Data sources	Data sources include nutrition surveys, any other representative population-based surveys with nutrition modules, and surveillance systems. A detailed description of the methodology and procedures of the database, including data sources, criteria for inclusion, data quality control and database workflow, are described elsewhere (67).
Data collection frequency	Every 3–5 years.
Guidance for data collection	Children's length/height and weight are measured using standard procedures (51–53). See Annex 2 for detailed descriptions of length/height and weight measurements, and training and standardization for the measurers.
Length/height	Children less than 24 months of age are measured lying down, while standing height is measured for children 24 months and older. An overview of procedures for length/height measurement is provided in Annex 2.
Weight	Children and mothers can be weighed using electronic scales that are usually durable and flexible. The mother can first be weighed with the child and then weighed alone. This technique is useful when the child struggles and use of a sling or weighing pants causes stress. Another advantage of this method is that the mother's weight is also recorded. Further description of weight measurement is presented in Annex 5. See also the WHO Training Course on Child Growth Assessment ( <i>51, 52</i> ) and Cogill 2003 ( <i>53</i> ) for details on anthropometric measurements.
Guidance on reporting	Disaggregated data should be presented by age, sex, place of residence, region, socioeconomic status (wealth quintile), and maternal education.

24)



### **3.5 EXCLUSIVE BREASTFEEDING IN INFANTS AGED SIX MONTHS OR LESS**

### **GLOBAL TARGET 5**

By 2025, increase the rate of exclusive breastfeeding in the first six months to at least 50%



**Breast milk** provides optimal nutrition for a growing infant. Human milk contains adequate minerals and nutrients for the first six months of life. Breast milk also contains immune components, cellular elements and other host-defence factors that provide protection against infection. WHO recommends that breastfeeding should be initiated within the first hour of birth, infants should be exclusively breastfed during the first six months and continue breastfeeding for up to two years of age or beyond (*68*).

In general, global rates of exclusive breastfeeding are low. In developing countries, lack of breastfeeding, particularly lack of exclusive breastfeeding during the first months of life, is an important risk factor for infant and childhood morbidity and mortality, especially resulting from diarrhoeal disease and acute respiratory infections (69). *The Lancet* series on breastfeeding suggests that scaling up breastfeeding to a near-universal level could prevent 823,000 deaths annually in children less than 5 years of age and 20,000 deaths annually from breast cancer (70). These benefits are observed for women and children in all countries, rich or poor.

Global target 5 implies that the global rate of exclusive breastfeeding estimated to be 38% for the period 2006-2010 should increase to 50% by 2025 (1). This would involve 1 percentage point increase per year and would lead to approximately 10 million more children being exclusively breastfed until six months of age.

Exclusive breastfeeding rate in infants <6 months of age
Percentage of infants <6 months of age who are fed exclusively with breast milk
Number of infants <6 months of age who are exclusively breastfed (meaning no other food or drink, including water).
Total number of infants <6 months of age surveyed.
Number of infants <6 months who received only breast milk during the previous day
ng rate = *10 Total number of infants <6 months of age surveyed

Measurement frequency	Every 3–5 years.
Data availability	UNICEF maintains a global database on exclusive breastfeeding ( <u>http://data.unicef.org/nutrition</u> ). The WHO Programme of Nutrition, Physical Activity and Obesity, at the Regional Office for Europe independently compiles country information on exclusive breastfeeding.
	Much of the data from high-income countries refer to exclusive breastfeeding at 6 months, which provides lower estimates than the standard measure of exclusive breastfeeding averaged over the first six months.
Data sources	Population-based household surveys
Guidance for data collection	The guidance related to the indicator definition, standard questions and operational information for exclusive breastfeeding are available in WHO 2008 (31) and WHO 2010 (80). A majority of countries report on this indicator by implementing DHS and MICS surveys which follow the WHO guidance.
Guidance on reporting	Where sample size permits, disaggregated data should be presented by sex, place of residence, socioeconomic status (wealth quintile), and maternal education. Further disaggregation can be done by age, e.g., 0–2 months 3–5 months.



GLOBAL NUTRITION MONITORING FRAMEWORK OPERATIONAL GUIDANCE FOR TRACKING PROGRESS IN MEETING TARGETS FOR 2025



### **3.6 WASTING IN CHILDREN UNDER FIVE YEARS OF AGE**

### **GLOBAL TARGET 6**

By 2025, reduce and maintain childhood wasting to less than 5%



**Wasting** In 2016 continued to threaten the lives of 51.7 million children under 5 (9). Wasted children are at greater risk of morbidity and mortality. Tackling wasting is essential to prevent risk of disease and mortality in children. Improved child survival depends on preventing wasting and ensuring timely and appropriate life-saving treatment for wasted children.

Wasting results when a child falls significantly below the expected weight of a child of the same length or height. Wasting indicates current or acute undernutrition resulting from failure to gain expected weight or loss of weight. The main causes of wasting are inadequate food intake, inappropriate feeding practices, and infection or frequently a combination of all three factors.

Wasting, or low weight-for-height, helps identify children suffering from current or acute undernutrition. It can be measured even when exact age is difficult to determine. Weight-for-length (in children under 2 years of age) or weight-for-height (in children over 2 years of age) is appropriate for examining short-term effects such as seasonal food shortages, inadequate food intake, and illness such as gastroenteritis and acute respiratory infection.

Because of its response to short-term influences, wasting is often used for screening or targeting purposes in emergency settings and is sometimes used for annual reporting. Users should be aware and consider that wasting can have a strong seasonal dimension and reporting needs to include contextual data.

The target implies that the global prevalence of childhood wasting of 8.6% estimated for 2012 should be reduced to less than 5% by 2025 and maintained below such levels (60). In the period 2005–2010, 53 countries reported childhood wasting rates above 5% at least once. Wasting reduction requires implementation of preventive interventions such as improved access to high-quality foods and health care; improved nutrition and health knowledge and practices; promotion of exclusive breastfeeding for the first six months and promotion of improved complementary feeding practices for all children aged 6–24 months; and improved water supply and sanitation services and hygiene practices to protect children against communicable diseases.

Indicator name	Children under 5 years who are wasted (moderate and severe).
Definition	Percentage of wasted (moderate and severe) children aged 0–59 months (moderate = weight- for-height between <-2 and >-3 SD of the WHO Child Growth Standards median; severe = weight-for-height below -3 SD of the WHO Child Growth Standards median)
METHOD OF ESTIMATION	
Numerator	Number of children aged 0–59 months who are wasted.
Denominator	Total number of children aged 0–59 months who were measured.
Percent c	f wasted children = Total number of children 0–59 months who who are wasted *100 *100
Measurement frequency	Every 3–5 years.
Data availability	Since 1989, WHO maintains the Global Database on Child Growth and Malnutrition. This global database includes population-based surveys that included anthropometric measurements of nationally representative samples of children less than 5 years of age.
Data sources	Main sources of data are population-based household surveys with anthropometry and national nutrition surveillance systems.
Data quality	WHO maintains the Global Database on Child Growth and Malnutrition, which includes population-based surveys that fulfil a set of criteria. Data are checked for validity and consistency and raw data sets are analysed according to a standard procedure to obtain comparable results.
Guidance for data collection	Children's weight and length/height are measured using standard methods. Children less than 24 months of age are measured lying down, while standing height is measured for children aged 24 months and older. Detailed descriptions of length/height and weight measurements, and training and standardization of measurers, are presented in Annex 2 and Annex 5. Also, see WHO Training Course on Child Growth Assessment ( <i>51, 52</i> ) and Cogill 2003 ( <i>53</i> ) for further details on anthropometric measurements.
Guidance on reporting	The World Health Organization classifies wasting in children as moderate or severe, according to the WHO child growth standards for weight-for-height (71).
	Prevalence of wasting in children less than 5 years of age should be presented in disaggregated form. Disaggregation should be made by age, sex, place of residence, region, socioeconomic status, and mother's education whenever possible. Prevalence of wasting should also be presented by severity – moderate (weight-for-height z-score between <-2 and >-3 standard deviations) and severe (weight-for-height z-score below -3 standard deviations).

28)

## INTERMEDIATE OUTCOME, PROCESS AND POLICY ENVIRONMENT AND CAPACITY INDICATORS

KAT

Seller.
#### 4.1 INTERMEDIATE OUTCOME INDICATORS

#### 4.1.1 Coverage of diarrhoea treatment

The original GNMF indicator for diarrhoea was "prevalence of diarrhoea in children under 5 years of age". In the past, WHO's Department of Maternal, Newborn, Child and Adolescent Health (MCAH) included diarrhoea prevalence data based on national household surveys. But this is not maintained any more as diarrhoea is seasonal and a national average point-prevalence has little meaning. However, WHO's global database will include an indicator on coverage of diarrhoea treatment with ORS. In addition, the diarrhoea indicator included in the 100 Core Health Indicators is "children with diarrhoea receiving oral rehydration solution (ORS)".

Diarrhoea is defined as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual). Frequent passing of formed stools is not diarrhoea, nor is the passing of loose, "pasty" stools by breastfed babies.

Diarrhoea is a leading cause of childhood mortality, accounting for 9% of all deaths among children less than 5 years of age worldwide in 2015 (72). Diarrhoea is more prevalent in low- and middle-income countries due to lack of safe drinking-water, sanitation and hygiene, as well as poorer overall health and nutritional status (34, 35). Most diarrhoea deaths among children under five years old occurred in Sub-Saharan Africa and South Asia. Despite this heavy burden, there has been some progress in decreasing the annual number of deaths from diarrhoea among children less than 5 years of age. In last fifteen years, the decrease of deaths from diarrhoea was more than 50% – from over 1.2 million in 2000 to half a million in 2015. Most of the deaths in children from diarrhoea could be averted by using ORS and zinc supplementation during episodes of diarrhoea and basic interventions to improve drinking-water, sanitation and hygiene (WASH) for diarrhoea prevention (73, 74). It is estimated that ORS alone can prevent 93% of deaths due to diarrhoea, and zinc can decrease deaths from diarrhoea by 23%.

Indicator name	Children under 5 years with diarrhoea receiving oral rehydration solution (ORS).		
Definition	Percentage of children under 5 years of age with diarrhoea in the last two weeks receiving ORS (fluids made from ORS packets or pre-packaged ORS fluids).		
METHOD OF ESTIMATION			
Numerator	Number of children under 5 years of age with diarrhoea in the two weeks preceding the survey given fluid from ORS packets or pre-packaged ORS fluids.		
Denominator	Number of children with diarrhoea in the two weeks preceding the survey.		
Percent of child diarrhoea receiv	*100		
Measurement frequency	Every 3–5 years.		
Data availability	Data are derived from re-analysis of DHS and MICS micro-data, which are publicly available using the standard indicator definitions as published in DHS or UNICEF documentation (available at: <u>https://data.unicef.org/topic/child-health/diarrhoeal-disease/</u> ).		
Data sources	The main source of data should be household surveys. The other sources of data could be routine facility information systems.		
Guidance on reporting	Where sample size permits, this indicator should be presented in disaggregated form. Disaggregation should be made by age, sex, place of residence, and socioeconomic status.		

In last fifteen years, the decrease of deaths from diarrhoea was more than 50% – from over 1.2 million in 2000 to half a million in 2015

#### 4.1.2 Low BMI in women aged 15–49 years

34

Body mass index (BMI) is a person's weight in kilograms divided by the square of height in meters. BMI is an easy and inexpensive method of screening to identify underweight, normal weight, overweight, and obesity. A BMI of less than 18.5 kg/m<sup>2</sup> is considered as underweight or low BMI.

Indicator name	Percentage of women of reproductive age who are underweight.		
Definition	Percentage of women aged 15–49 years with low BMI (<18.5 kg/m <sup>2</sup> ). This excludes pregnan women.		
METHOD OF ESTIMATION			
Numerator	Number of non-pregnant women aged 15–49 years with low BMI (<18.5 kg/m <sup>2</sup> ).		
Denominator	Total number of non-pregnant women aged 15–49 years in the sample.		
Percent of women v	Number of non-pregnant women aged 15–49 years in the sample with BMI <18.5 kg/m <sup>2</sup> *100		
reicent of women v	Total number of non-pregnant women aged 15–49 years in the sample		
Measurement frequency	Every 3–5 years.		
Data availability	The NCD Risk Factor Collaboration (NCD-RisC) derives estimates for countries for the ag group 18+ years and will continue updating them at regular intervals. Detailed methods ar available elsewhere (75).		
	The chosen age range refers to women of reproductive age and reflects the target group commonly assessed in national household surveys. Countries that assess adolescents' growth separately and have adopted the WHO growth reference 2007 may provide a separate estimate using the BMI-for-age cut-off <-2 SD for the age group 15–18 (max 19.0) years and the fixed cut-off BMI <18.5 kg/m <sup>2</sup> for their female (non-pregnant) adult population up to 50 years.		
Data sources	Population-based household surveys, national surveillance systems.		
Guidance on reporting	Percentage of non-pregnant women aged 15–49 years with low BMI (<18.5 kg/m <sup>2</sup> ) should be disaggregated by maternal age and education, place of residence, and socioeconomic status.		



GLOBAL NUTRITION MONITORING FRAMEWORK OPERATIONAL GUIDANCE FOR TRACKING PROGRESS IN MEETING TARGETS FOR 2025

#### 4.1.3 Adolescent fertility rate

Globally, the adolescent birth rate in 2015 was 44.1 per 1000 women aged 15–19 years with highest in the African Region (100.3/1000) and lowest in the Western Pacific Region (15.3/1000) (76). Key determinants of adolescent pregnancy include early marriage, sexual coercion and lack of access to and use of contraception (77, 78).

Indicator name	Adolescent fertility rate (per 1000 girls aged 15–19 years).	
Definition	Annual number of births to women aged 15–19 years per 1000 women in that age group. It i also referred to as the age-specific fertility rate for women aged 15–19 years.	
METHOD OF ESTIMATION		
Numerator	Number of live births that occurred in women aged 15–19 years at the time of the birth in a given year.	
Denominator	Total number of women aged 15–19 years in the same year.	
	The adolescent birth rate is generally computed as a ratio. The numerator is the number of live births to women aged 15–19 years, and the denominator is the total number of women aged 15–19 years. The numerator and the denominator are calculated differently for civil registration and survey and census data.	
٨	ent fertility rate = Number of live births to women aged 15–19 years in a year *1000	
Adolesce	ent fertility rate = *1000 Total number of women aged 15–19 years in a year	
	If numbers are available, adolescent fertility at ages less than 15 years can also be computed.	
Civil registration	In the case of civil registration data, the numerator is the registered number of live births bor to women aged 15–19 years during a given year, and the denominator is the enumerated of estimated population of women aged 15–19 years during that year.	
Survey data	In the case of survey data, the adolescent fertility rate is generally computed based on retrospective birth histories. The numerator refers to births to women who were 15–19 years of age at the time of the birth during a reference period before the interview, and the denominator is the total number of women between the ages of 15 and 19 years during the same reference period who were interviewed.	
	Whenever possible, the reference period corresponds to the five years preceding the survey. The reported observation year corresponds to the middle of the reference period. For some surveys, no retrospective birth histories are available and the estimate is based on the date of last birth or the number of births in the 12 months preceding the survey.	
Census data	With census data, the adolescent fertility rate is generally computed based on the date of last birth or the number of births in the 12 months preceding the enumeration. The census provides both the numerator and the denominator for the rates. In some cases, the rates based on censuses are adjusted for under-registration based on indirect methods of estimation.	
Data collection frequency	Annual.	
Data availability	The United Nations Population Division compiles and updates data on adolescent fertilit rates. Estimates based on civil registration are provided when the country reports at leas 90% coverage and there is reasonable agreement between civil registration estimate and survey estimates. Survey estimates are provided only when there is no reliable civil registration. Available at: <a href="http://www.un.org/en/development/desa/population&lt;br&gt;publications/dataset/fertility/adolescent-rate.shtml">http://www.un.org/en/development/desa/population</a>	
Data sources	Civil registration systems with full coverage are the preferred sources of data. Other sources data include population census and household surveys.	
Guidance on data collection	In countries where data from civil registration or population census are not available or outdated, this indicator should be collected through nationally representative household surveys.	
Guidance on reporting	Disaggregated data should be presented by marital status, education level, place of residence,	

#### 4.1.4 Overweight and obesity in women 18+ years of age

WHO estimates show an increase in the prevalence of overweight in women from 36.8% in 2010 to 39.2% in 2016. The region with highest prevalence is the Americas with 60.9% overweight women, followed by Europe (54.3%) and Eastern Mediterranean region (52.6%) (79).

Definition		of non-pregnant women (18+ years) who are overweight (defined as hav and obese (defined as having a BMI $\geq$ 30 kg/m <sup>2</sup> )	ving a BMI
		lated by dividing the subject's weight in kilograms by their own height verweight is defined as having a BMI $\geq$ 25 kg/m <sup>2</sup> and obesity is defined as /m <sup>2</sup> .	
METHOD OF ESTIMATION			
Numerator		Number of non-pregnant women aged 18+ years who are overweight and number of non- pregnant women aged 18+ years who are obese.	
Denominator	All non-pre	gnant women of the survey aged 18+ years.	
	0	Number of non-pregnant women aged 18+ years in the sample with BMI ≥25 kg/m <sup>2</sup>	
	Overweight =	Total number of non-pregnant women aged 18+ years in the sample	*100
	Obseite	Number of non-pregnant women aged 18+ years in the sample with BMI ≥30 kg/m <sup>2</sup>	
	Obesity =	Total number of non-pregnant women aged 18+ years in the sample	*100
Data collection frequency	Every 3–5 ye	Every 3–5 years.	
Data availability	and obesi <u>A896?lang</u> =	WHO's Global Health Observatory (GHO) data repository includes data on both overweight and obesity among women (available at: <u>http://apps.who.int/gho/data/node.main.</u> <u>A896?lang=en</u> ) The NCD-RisC derives these estimates for countries and will continue updating them at regular intervals (available at: <u>http://www.ncdrisc.org/about-us.html</u> ).	
Data sources		Nationally representative population-based (preferably) surveys in which height and weight of adult women are measured.	
Guidance on data collection	n Height and	Height and weight of adult women are measured using standard procedures.	
Guidance on reporting	55 5	Disaggregated data should be presented by age, sex, education level, place of residence and socioeconomic status.	

36

#### 4.1.5 Overweight and obesity in school-age children and adolescents

Overweight is defined as excess body weight for a given height from fat, muscle, bone, water, or a combination of these factors. Obesity, on the other hand, is defined as having excess body fat. Childhood obesity is increasing at an alarming rate in many countries and poses an urgent and serious challenge (65). NCD-RisC included data for children and adolescents 5–19 years of age and found that the global age-standardised prevalence of obesity increased from 0.7% in 1975 to 5.6% in 2016 in girls and from 0.9% in 1975 to 7.8% in 2016 in boys. It is estimated that in 2016, 50 million girls and 74 million boys worldwide were obese (75).

Indicator name	Overweight and obesity in school-age children and adolescents 5–19 years.	
Definition	Prevalence of overweight in school-age children and adolescents is defined as the percenta of children aged 5–19 years with sex-specific BMI-for-age above +1 SD from the WHO 20 reference median. Prevalence of obesity in school-age children and adolescents is defined the percentage of children aged 5–19 years with sex-specific BMI-for-age above +2 SD fro the WHO 2007 reference median.	
METHOD OF ESTIMATION		
Numerator	Number of school-age children and adolescents (5–19 years) in the sample who are over (>+1SD) and obese (>+2 SD).	erweight
Denominator	Total number of school-age children and adolescents (5–19 years) who were measur	ed.
Prevalence of overweight and	Number of school-age children and adolescents in the sample with BMI-for-age>+1 SD or >+2 SD of the WHO 2007 reference ) obesity =*	100
	Total number of school-age children and adolescent in the sample	
Data collection frequency	Every 3–5 years.	
Data availability	WHO maintains the Global Database on Child Growth and Malnutrition, which population-based surveys that fulfil a set of criteria. Data are checked for valid consistency and raw data-sets are analysed according to a standard procedure to comparable results. Prevalence below and above defined cut-off points for weight height-for-age, weight-for-height and BMI-for-age in pre-school children are present z-scores based on the WHO Child Growth Standards.	dity and o obtain -for-age,
	The NCD-RisC derives these estimates for countries and will continue updating the regular intervals. Detailed methodology has been described elsewhere (75).	same at
Data sources	Nationally representative population-based household surveys with height and weig measurements of school-age children and adolescents (5–19 years). Other sources of da include national nutrition surveillance systems.	
Guidance on data collection	Children's weight and height are measured using standard procedures. For a detailed description, see section 3.1 for height measurements and section 3.6 for weight measurement it is recommended to follow the procedures described in Annex 2 and Annex 5 for height arweight measurements.	
Guidance on reporting	Disaggregated data should be presented by age, sex, education level, place of re socioeconomic status, and maternal education.	sidence,



#### **4.2 PROCESS INDICATORS**

#### 4.2.1 Minimum dietary diversity

Infant and young child feeding practices directly affect the nutritional status of children under two years of age. Improving infant and young child feeding practices is critical to improved nutrition, health and development of children. Complementary feeding should be timely, adequate and appropriate. This means that all infants should start receiving diverse complementary foods in addition to breastmilk from 6 months onwards.

Infant and young child feeding practice indicators can be used to monitor effective coverage of a variety of breastfeeding and complementary feeding interventions.

This infant and young child feeding indicator is one of the four indicators reporting for which was deferred until 2018 to allow for development of additional operational guidance for Member States. The original indicator included in the Global Nutrition Monitoring Framework was the "Minimum Acceptable Diet" indicator as defined in WHO (2008) *Indicators for assessing infant and young child feeding practices part 1: Definitions (31).* 

The WHO-UNICEF Technical Expert Advisory group on nutrition Monitoring (TEAM) was tasked

to further develop and validate this indicator. TEAM discussed various aspects of this indicator – overall indicator "fit" for purpose, appropriateness of indicator definition and availability of data for this indicator. The TEAM provisionally recommended a simpler indicator, "Minimum Dietary Diversity" as defined in WHO 2008 (*31*) but also recommended review of the indicator definition. Analyses from the Demographic and Health Surveys, the Multiple Indicator Cluster Surveys, and from three nationally representative quantitative dietary intake data sets were presented to a consultation in June 2017, which resulted in a recommendation to revise the MDD indicator definition. The revised indicator is considered feasible and meaningful for Member State reporting.

Indicator name	Minimum Dietary Diversity (MDD). Proportion of children <sup>3</sup> 6–23 months of age who receive foods from 5 or more food groups.	
Definition		
Age range and sampling	The age range for this indicator is 6–23 months. To report on this indicator, countries may need to expand the age range covered in existing surveys. Nationally representative dietary surveys in some countries do not include children under two years of age but the age range could be expanded to allow reporting on MDD. <sup>4</sup>	



The age range of 6-23 months includes both infants (less than 12 months) and young children. In the indicator definition, and in the remainder of this section, we refer to this age group, collectively, as "children".

The age range could be further expanded downwards to birth, to allow reporting on the WHA target for exclusive breastfeeding.

METHOD OF ESTIMATION		
Numerator	Number of children 6–23 months of age who received foods from 5 or more food groups yesterday during the day or night.	
Denominator	Children 6–23 months of age for whom data on breastfeeding and diet were collected.	
	Number of children 6–23 months of age who received foods from 5 or more food groups yesterday during the day or night	
Minimum dietary c	fiversity =	
	Information on dietary diversity can be collected using simple qualitative recalls as in the DHS, MICS, and some other simple diet screeners, or can be collected using quantitative 24- hour dietary recalls, so long as foods can be grouped into 8 standard groups that were either consumed or not consumed yesterday during the day or night:	
	1. Breast milk	
	2. Grains, roots and tubers	
	3. Legumes and nuts	
	4. Dairy products	
	5. Flesh foods	
	6. Eggs	
	7. Vitamin-A rich fruits and vegetables	
	8. Other fruits and vegetables	
	Detailed guidance on grouping foods in the context of simple qualitative recalls is available in WHO. (2010) <i>Indicators for assessing infant and young child feeding practices part 2: Measurement</i> (80) (available at <u>http://apps.who.int/iris/bitstream/10665/44306/1/9789241599290_eng</u> pdf?ua=1). The WHO 2010 document describes 7 food groups. Based on the June 2017 expert consultation, breast milk has been added as an 8 <sup>th</sup> food group and the criterion for MDD has shifted accordingly, from 4 of 7 groups to 5 of 8 groups. Guidance on grouping foods and operationalizing MDD from quantitative 24-hour recalls is available in Annex 6.	
Data collection frequency	At least every 3–5 years.	
Data availability	UNICEF maintains a global database on MDD for which primary source data such as surver reports and related materials are checked for validity and consistency (available at: https:// data.unicef.org/topic/nutrition/infant-and-young-child-feeding/). If necessary, raw data se are analyzed according to a standard procedure to obtain comparable results. Historically, th indicator has not been generated from quantitative 24-hour dietary recalls. Going forwar if countries report on this indicator using data from 24-hour recalls following the approace described in Annex 6, results could be considered for inclusion in the UNICEF Global database	
Data sources	Nationally representative population-based household surveys that include modules qualitative or quantitative dietary recalls for children from 6 to 23 months of age.	
Guidance on data collection	Guidance for data collection and for operationalizing the indicator using simple qualitative recalls is available in WHO 2010 (80). This guidance describes the data collection methodology and provides a model questionnaire. Note however that the instructions for indicator tabulation will be updated to reflect inclusion of breast milk as an 8 <sup>th</sup> food group in the calculation of MDD.	
	Guidance for collecting quantitative dietary recalls is available from many sources and is beyond the scope of this document. Guidance for operationalizing the indicator using data from quantitative 24-hour recalls is available in Annex 6 of this document.	
Guidance on reporting	When sample sizes allow, disaggregated data should be presented by sex, age and breastfeeding status. Recommended age groups for reporting are 6–11 months, 12–17 months and 18–23 months of age. It may also be useful to disaggregate by place of residence socioeconomic status (e.g., wealth quintile), and maternal education.	

#### 4.2.2 Population using safely managed drinking-water services

Water and sanitation are fundamental to human development and well-being. In 2010, the United Nations General Assembly recognized access to safe water and sanitation as a human right (81). These are critical to the achievement of other development objectives related to nutrition, gender equality, education and the eradication of poverty. Access to water and sanitation are considered as core socioeconomic and health indicators and key determinants of children's health and survival, maternal health, family well-being and economic productivity.

There are several global initiatives that are monitoring different aspects of the water sector. Since 1990, the WHO-UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation has been monitoring progress on drinking water and sanitation (*82*). The JMP is collaborating with UN-Water and the Global Expanded Monitoring Initiative (GEMI) to develop a framework for integrated monitoring of water and sanitation under Sustainable Development Goal (SDG) 6 (*83*). UN-Water is integrating and expanding existing efforts to ensure harmonised monitoring of the entire water cycle. The JMP has established a standard set of drinkingwater and sanitation categories that are used for monitoring purposes (82). An "improved" drinking-water source is one that, by the nature of its construction and when properly used, adequately protects the source from outside contamination, particularly faecal matter. An "improved" sanitation facility is one that hygienically separates human excreta from human contact. The JMP will use a new indicator of "the percentage of the population using safely managed drinking water services" to monitor SDG Target 6.1. Definitions and methods used by the JMP are often different from those used by national governments. Estimates in the JMP reports may therefore differ from national estimates.



GLOBAL NUTRITION MONITORING FRAMEWORK OPERATIONAL GUIDANCE FOR TRACKING PROGRESS IN MEETING TARGETS FOR 2025

Indicator name	Percentage of population using safely managed drinking-water services.	
Definition	Population using an improved drinking water source (piped water into dwelling, yard or plo public taps or standpipes; boreholes or tube wells; protected dug wells; protected spring rainwater, packaged or delivered water) which is located on premises, available when needer and free of faecal and priority chemical <sup>5</sup> contamination.	
METHOD OF ESTIMATION		
Numerator	Population using safely managed drinking-water services.	
Denominator	Total population.	
	The indicator is computed as the ratio of the number of people who use a safely managed drinking-water service, urban and rural, expressed as a percentage.	
	Number of households (or population) with safely managed drinking water services)	
Population using safely ma	anaged drinking-water =	
Data collection frequency	Biennial.	
Data availability	The JMP assembles, reviews, and assesses data collected by national statistics offices and other relevant institutions through nationally representative household surveys and national censuses. Data can be pulled directly from the existing database (available at: <a href="https://washdata.org/data">https://washdata.org/data</a> ). The latest country statistics are 2015 estimates and available at <a href="https://washdata.org/data">https://washdata.org/data</a> ). The latest country statistics are 2015 estimates and available at <a href="https://washdata.org/data">https://washdata.org/data</a> ). The latest country statistics are 2015 estimates and available at <a href="https://washdata.org/data">https://washdata.org/data</a> ) and <a href="https://washdata.org/data">https://washdata.org/data</a> and <a href="https://washdata.org/data">https:/</a>	
	Data from household surveys or censuses provide information on the types of drinking-water sources used by people. Such data are combined with data on water quality, availability and accessibility from household surveys as well as data from administrative records or regulatory frameworks for various aspects of safe management.	
	Most nationally representative household surveys include information about improved water sources. The survey questions and response categories pertaining to access to basic drinking-water sources are fully harmonized between DHS and MICS and are adopted from the standard questionnaire promoted for inclusion in survey instruments by the JMP.	
	Administrative data on faecal and chemical contamination will be collected by JMP through consultation with the government institutions responsible for drinking-water supply and regulation.	
	For each country, data on use of improved drinking-water sources from surveys and censuses are plotted on a timescale from 2000 to the present. A linear trend line, based on the least- squares method, is drawn through these data points to provide estimates of use of basic drinking-water sources for all years between 2000 and, wherever possible, the present year. Estimates of the accessibility and availability of water, along with compliance to water quality standards, will be collected from countries and combined with data on use of improved drinking-water sources.	
Data sources	Household surveys, population census, data from administrative sources or regulator frameworks.	
Guidance on data collection	The survey questions and response categories for populations using basic drinking-water sources should be fully harmonized with DHS and MICS and adopted from the standard questionnaire promoted for inclusion in survey instruments by the JMP. This can be accessed via <a href="http://www.who.int/water_sanitation_health/monitoring/oms_brochure_core_questionsfinal24608.pdf">http://www.who.int/water_sanitation_health/monitoring/oms_brochure_core_questionsfinal24608.pdf</a> .	
Guidance on reporting	Disaggregated data should be presented by place of residence (urban/rural), socioeconomic status (wealth, affordability etc.).	

<sup>5</sup> Priority chemicals will vary by country, but at a global level priority will be placed on arsenic and fluoride.

(41

#### 4.2.3 Population using safely managed sanitation services

The JMP will use a new indicator of "Percentage of population using safely managed sanitation services, including a handwashing facility with soap and water" to monitor SDG Target 6.2. This indicator consists of two subindicators which will be reported separately: the population using safely managed sanitation services (6.2.1a), and the population having handwashing facilities with soap and water (6.2.1b). The safely managed sanitation services indicator builds on the MDG indicator "proportion of population using an improved sanitation facility" and incorporates aspects of accessibility (in households), acceptability and safety (not shared with other households), to further address the normative criteria of the human right to water. To ensure public health beyond the household, this indicator incorporates the safe management of faecal waste along the entire sanitation chain, from containment to final treatment and disposal.



GLOBAL NUTRITION MONITORING FRAMEWORK OPERATIONAL GUIDANCE FOR TRACKING PROGRESS IN MEETING TARGETS FOR 2025

Indicator name	Percentage of population using safely managed sanitation services.	
Definition	Population using an improved sanitation facility that is not shared with other households and where excreta are safely disposed of in situ or treated off site	
	Improved sanitation facilities include flush or pour flush toilets to sewerage systems, seption tanks or pit latrines, improved pit latrines (pit latrines with a slab or ventilated pit latrines) and composting toilets.	
METHOD OF ESTIMATION		
Numerator	Population using safely managed sanitation services.	
Denominator	Total population.	
	The indicator is computed as the ratio of the number of people who use a safely managed sanitation service, urban and rural, expressed as a percentage.	
	Number of households (or population) with safely managed sanitation services	
Population using sa	fely managed sanitation = *100 Total number of households (or population)	
Data collection frequency	Biennial.	
Data availability	The JMP on Water Supply and Sanitation assembles, reviews and assesses data collected by national statistics offices and other relevant institutions through nationally representative household surveys and national censuses.	
	Data from household surveys or censuses provide information on types of basic sanitatio facilities listed above. Such data will be combined with data from administrative record or regulatory frameworks for various aspects of safe management. The percentage of th total population using an improved sanitation facility is the population weighted averag of the previous two numbers. Most nationally representative household surveys includ information about improved water and sanitation. The survey questions and respons categories pertaining to use of improved sanitation facilities are fully harmonized betwee DHS and MICS and are adopted from the standard questionnaire promoted for inclusion i survey instruments by the WHO-UNICEF JMP on Water Supply and Sanitation (82). This ca be accessed via <a href="https://washdata.org/">https://washdata.org/</a> The percentage of the population using different type of improved sanitation facilities will be adjusted with estimates of the proportion of facilities which are not shared, as well as the proportion of facilities for which faecal waste is safel disposed in situ or transported and treated offsite.	
	Data can be pulled directly from the existing database (available at: https://washdata.org data). The latest country statistics of 2015 estimates are available at https://washdata.org data and http://apps.who.int/gho/data/node.main.46?lang=en; updated estimates of 201 are available for reporting on the SDG.	
	For each country, survey and census data are plotted on a timescale from 2000 to the present A linear trend line, based on the least-squares method, is drawn through these data points to provide estimates for all years between 2000 and, wherever possible, the present year. Dat on excreta management will be collected from countries and combined with the data on us of improved sanitation facilities.	
Data sources	Household surveys, population census, data from administrative sources or regulator frameworks.	
Guidance on data collection	The survey questions and response categories for populations using a basic sanitation facility should be fully harmonized with DHS and MICS and adopted from the standard questionnaire promoted for inclusion in survey instruments by the WHO-UNICEF JMP on Water Supply and Sanitation. This can be accessed via <a href="http://www.who.int/water sanitation healthmonitoring/oms_brochure_core_questionsfinal24608.pdf">http://www.who.int/water sanitation facility should be fully harmonized with DHS and MICS and adopted from the standard questionnaire promoted for inclusion in survey instruments by the WHO-UNICEF JMP on Water Supply and Sanitation. This can be accessed via <a href="http://www.who.int/water sanitation healthmonitoring/oms_brochure_core_questionsfinal24608.pdf">http://www.who.int/water sanitation healthmonitoring/oms_brochure_core_questionsfinal24608.pdf</a>.</a>	
Guidance on reporting	Disaggregated data should be presented by place of residence (urban/rural), socioeconomi status (wealth, affordability etc.).	

#### 4.2.4 Antenatal iron supplementation

Anaemia is a persistent disorder in women of reproductive age which can cause fatigue, low productivity and even death. This population is more susceptible due to the increase in blood volume during pregnancy. Roughly one-third of all pregnant women are anaemic. Half of all anaemia in pregnancy is amenable to iron supplementation, as iron deficiency is a contributing factor. For that reason, daily oral iron and folic acid supplementation is recommended for pregnant women to prevent maternal anaemia, puerperal sepsis, low birth weight, and preterm birth. Most countries have adopted some form of antenatal supplementation policy over the last two decades.

This is one of the four indicators reporting for which was deferred until 2018 to allow for development of additional operational guidance for Member States. The original indicator included in the GNMF was defined as "the proportion of women with a birth in the last 2 years who received or bought iron and folic acid supplements for at least 6 months during their last pregnancy, in amounts that were in accordance with recommended protocols".

The Technical Expert Advisory group for nutrition Monitoring (TEAM), which was convened by UNICEF and

WHO in 2015 to advise on further development of this indicator, discussed various aspects of this indicator – overall indicator "fitness" for purpose, appropriateness of indicator definition and availability of data for this indicator. A study was conducted to assess the feasibility of reporting on this indicator by Member States.<sup>6</sup> Based on the results from the feasibility study, TEAM recommended a simpler indicator "any antenatal iron supplementation" that is likely to capture the purpose of this indicator and feasible for most Member States to report on.



<sup>6</sup> Developing and validating an indicator on iron and folic acid supplements for monitoring progress of the Global Nutrition Monitoring Framework indicators. Final report, May 2017.

Indicator name	Any antenatal iron supplementation.	
Definition	The proportion of women who consumed any iron-containing supplements during the current or past pregnancy within the last 2 years.	
	<i>Note:</i> The data can be reported on any iron-containing supplement including iron and folic acid tablets (IFA), multiple micronutrient tablets or powders, or iron-only tablets which will vary by country policy.	
Age range and sampling	There is no age range for this indicator, although all women must be or have been pregnant within the last two years, and therefore generally are of reproductive age (15–49 years of age). Due to the limited number of pregnancies usually found in population-based surveys, countries may need to oversample currently or recently pregnant (within the last 2 years) women to generate reliable estimates for this indicator.	
METHOD OF ESTIMATION		
Numerator	Number of women in the sample who consumed any iron-containing supplements during the current or past pregnancy within the last 2 years.	
Denominator	Total number of women in the sample who are pregnant or have had a pregnancy in the last 2 years.	
Antenatal iron supplementa	Number of women in the sample who consumed any iron-containing supplements during the current or past pregnancy within the last 2 years tion =	
Antenatarii on supplementa	Total number of women in the sample who are pregnant or have had a pregnancy in the last 2 years	
Data collection frequency	Continuous, or every 3–5 years.	
Data availability	DHS collects data on antenatal iron consumption over any pregnancy in the last five years. It is possible to reanalyze the DHS data for pregnancies in the last 2 years, although samples will be smaller and therefore estimates less reliable. MICS supported by UNICEF may collect some data on iron and folic acid consumption in a pregnancy within the last two years. Many countries conduct regular national health and nutrition surveys (NHNS), but often collect consumption of iron-containing supplements as part of a general questionnaire on supplementation in the full population. Generally, the number of pregnant women sampled in these surveys is very small. Reliable estimates for pregnant women could not be generated without oversampling this sub-population. Finally, some health management information systems (HMIS) collect data on provision of antenatal supplementation but they generally do not verify consumption.	
Data sources	DHS, MICS, NHNS and HMIS (as above).	
Guidance on data collection	In order to improve the recall reliability of this indicator, samples of the commonly available supplements should be available for viewing during any population based survey conducted Enumerators must understand the difference between receipt or purchase of the supplemen and any consumption. In NHNS where supplement components are not always listed out reporting on any consumption of iron, specifically, will be reliant on well-guided data analysis in addition to data collection. For HMIS data, it may be useful to verify consumption of iron containing supplements at some stage of the monitoring process (depending on the system some options may include observing the first dose at the site of delivery, or confirming consumption verbally or through returned empty bottles/packages).	
Guidance on reporting	When sample sizes allow, disaggregated data may be presented by maternal education, place of residence, and socioeconomic status (e.g., wealth quintile).	

#### 4.2.5 Births in baby-friendly facilities

46

The Baby-friendly Hospital Initiative (BFHI) was launched by WHO and UNICEF in 1991, following the Innocenti Declaration of 1990. The initiative is a global effort to implement practices that protect, promote and support breastfeeding. The initiative has measurable and proven impact, increasing the likelihood of babies being exclusively breastfeed for the first six months (84). Since its launching, BFHI has grown, with more than 152 countries implementing it.

The operational areas of the BFHI Global Strategy recommended actions for the ten steps to successful breastfeeding, and a summary of the guidelines for maternity care facilities presented in the Joint WHO-UNICEF statement has been accepted as the minimum global criterion for attaining the status of a Baby-friendly Hospital (84). For more information, see <a href="http://www.who.int/nutrition/topics/bfhi/en/">http://www.who.int/nutrition/topics/bfhi/en/</a>. The programme also restricts use by the hospital of free infant formula or other infant care aids provided by infant formula companies.

Indicator name	Percentage of births in baby-friendly facilities.		
Definition	Percentage of babies born in a calendar year in facilities designated "baby-friendly".		
METHOD OF ESTIMATION			
Numerator	Number of births that took place in facilities currently designated as "baby-friendly" in calendar year.		
Denominator	Total number of births in a calendar year.		
	Number of births that took place in facilities currently designated as "baby–friendly" in a calendar year		
Percentage of births in baby	-friendly facilities =		
Data collection frequency	Every 3–5 years.		
Data availability	WHO's Department of Nutrition for Health and Development compiles information from countries using data from several sources.		
	This indicator has been included in the Global Nutrition Policy Review. An online questionnaire was sent out in 2016 to gather data. Data on this indicator will be pulled from this new database, which will be maintained by the WHO Nutrition Department. In 2016, the WHO Nutrition Department asked all BFHI coordinators or the Breastfeeding Coordinators in countries about implementation of the BFHI.		
Data sources	Member States reporting to WHO.		
Guidance on data collection	The questionnaire will include information on the number of births occurring annually i facilities that have been designated "baby-friendly" in the last five years. Since the 2009 BFF guidance indicates that there should be re-assessments at least every 5 years, the latter wi be interpreted as facilities "currently designated." The denominator will come from the UI Population Division.		
Guidance on reporting	Disaggregation should be done by type of location of the facilities (e.g. rural/urban). Some countries may be able to report on percent of facilities but not percent of births. This information will be requested in the surveys as well and used as a proxy if the number of births is not known.		

#### 4.2.6 Breastfeeding counselling

The original indicator included in the GNMF was "Proportion of mothers of children 0–23 months who have received counselling, support or messages on optimal breastfeeding at least once in the previous 12 months". This is one of the four indicators reporting for which was deferred until 2018 to allow for development of additional operational guidance for Member States.

The WHO-UNICEF Technical Expert Advisory group for nutrition Monitoring (TEAM) was tasked to further develop and validate this indicator. TEAM has worked on various aspects of this indicator including issues around age ranges, utility of the indicator, indicator definition and availability of data. As the data to compute this original indicator does not yet exist in most national data systems (e.g. national household surveys or HMIS), TEAM proposed an interim approach that should include countries reporting on existing interventions and policies to support breastfeeding counselling interventions across the age continuum.<sup>7</sup> The goal of the interim approach is to assess whether there is an operational programme in place for reaching mothers with appropriate support to enable optimal breastfeeding at any point along the spectrum. In the context of national health systems, this includes whether there are designated health service providers who are responsible for providing breastfeeding counselling and support during antenatal care, postpartum and in the first two years of life.

Indicator name	Availability of national-level provision for breastfeeding counselling services in public health and/or nutrition programmes.	
Definition	This indicator is defined as availability of a national program that includes provision delivering breastfeeding counselling services to mothers of infants 0–23 months of a through health systems or other community-based platforms.	
Method of estimation	Ministries of Health to report on the provision of breastfeeding counselling services in pul health and/or nutrition programmes. This can also be done through third-party review policy documents related to nutrition counselling services available in countries or natio government reporting to WHO.	
Data collection frequency	Every 3–5 years.	
Data availability and data sources	Data on provision of breastfeeding counselling and support is available from global polic reviews such as the Global Nutrition Policy Review (GNPR), conducted by the WHO (availabl at: http://apps.who.int/iris/bitstream/10665/84408/1/9789241505529_eng.pdf?ua=1) and i GINA (available at: https://extranet.who.int/nutrition/gina/), Nutri-Dash, maintained by UNICE (available at: http://unicefnutridash.org/?page=country-report), or the World Breastfeedin Trends Initiative (WBTi) report by IBFAN (available at: http://worldbreastfeedingtrends.org/ The recommended use of data from these reports is as follows: (1) GNPR, where available followed by (2) Nutri-Dash information; followed by (3) WBTi.	
Data sources	Challenges related to the quality of data on availability of counselling services/interventions in the context of national nutrition programmes or national health systems include the following:	
	Limited or no information on the quality of such programmes	
	Limited or no information on the coverage of such programmes	
	Limited information on adequacy of financing for provision of breastfeeding counselling	
	<ul> <li>Interpretations about provision made by assessing organizations or reporting biases due to self-report by national governments.</li> </ul>	
Guidance on data collection	For those countries where the GNPR, Nutri-DASH and WBTi are not available, we recommen that Ministries of Health should report to WHO on the provision of breastfeeding counsellin services in public health and/or nutrition programmes.	
Guidance on reporting	Every 3–5 years until a new indicator on exposure to counselling is available from national data systems.	

Proposal for an interim indicator on breastfeeding counseling and development of a counseling indicator for inclusion in large scale surveys to report on breastfeeding counseling. January 2017.

#### **4.3 POLICY ENVIRONMENT AND CAPACITY INDICATORS**

#### 4.3.1 Nutrition professionals density

Trained nutrition professionals work at various levels and in different setups including health facilities, and national and community levels. They may, therefore, influence nutrition policies, and designing and implementation of nutrition intervention programmes at various levels. They also play an important role in training of other health and non-health cadres to plan and deliver nutrition interventions in various settings. The requirement for a 'trained nutrition professionals' indicator is based on the recognition that availability, within a country, of sufficient workforce with appropriate training in nutrition will lead to better outcomes for country-specific nutrition and health concerns. Validation of the indicator defined in this guidance has shown that it can predict several maternal, infant and young child nutrition outcomes.<sup>8</sup>

The original indicator included in the Global Nutrition Monitoring Framework was "Number of trained nutrition professionals/100,000 population". This is one of the four indicators for which reporting was deferred until 2018 to allow for development of additional operational guidance for Member States. The WHO-UNICEF Technical Expert Advisory group on nutrition Monitoring (TEAM) was tasked to further develop and validate this indicator. The TEAM has worked on various aspects of the indicators, including their fitness for purpose, appropriateness of definition and availability of data. A study was conducted to assess validity of the indicator and feasibility of reporting on this indicator.<sup>8</sup> Based on the TEAM's work, the following indicator and definition are recommended.

	Nutrition professionals density.	
Definition	This indicator is defined as the number of nutrition professionals per 100,000 popula the country in a specified year.	ation in
Nutrition professionals and appropriate training	The focus of the nutrition professional indicator is on individuals trained to pursue a ne professional career, described in most countries as dieticians or nutritionists (ind nutrition scientists, nutritional epidemiologists and public health nutritionists).	
	These individuals are trained sufficiently in nutrition practice to demonstrate of competencies and to meet certification or registration requirements of national or nutrition or dietetics professional organisations (85–87). This training at universities of tertiary or higher education institutions may occur at Bachelor, Post-graduate certific Diploma, Masters and /or PhD degree levels.	global or other
	Dieticians and nutritionists may complete the same training and perform the same fur in some countries but not others. Likewise, professional registration or accredita dieticians and/or nutritionists may be joint or separate, and may occur in some countri not others. Countries are encouraged to implement professional registration or accreding of dieticians and/or nutritionists to provide a guarantee of appropriate training	tion of ries but ditation
	professional competence.	ng and
METHOD OF ESTIMATION		ng and
METHOD OF ESTIMATION Numerator		
	professional competence. Total number of nutritionists and dietitians employed in a nutrition-related role in gover	
Numerator Denominator	professional competence. Total number of nutritionists and dietitians employed in a nutrition-related role in gover and non-government sectors in the country in a specified year. Number of total population mid-year in the specified year. Sum of nutritionists and dietitians employed in a nutrition related role in government and non-government sectors in the country in a specified year	rnment
Numerator	professional competence. Total number of nutritionists and dietitians employed in a nutrition-related role in gover and non-government sectors in the country in a specified year. Number of total population mid-year in the specified year. Sum of nutritionists and dietitians employed in a nutrition related role in government and non-government sectors in the country in a specified year	

8 Report on Developing and validating an indicator on trained nutrition professionals for monitoring progress of the Global Nutrition Monitoring Framework (GNMF) indicators. 2017.

Data availability	This indicator was systematically collected for the first time in the WHO's 2 <sup>nd</sup> Global Nutrition Policy Review (GNPR2) (available at: <u>http://apps.who.int/iris/bitstream/10665/84408/1/9789241505529</u> <u>eng.pdf?ua=1</u> ). Data from this review were used to evaluate the feasibility and validity of the indicator. <sup>9</sup>
	The data were collected via a questionnaire developed for the GNPR2 which was disseminated to Member States through the WHO Regional and Country Offices, and information for each country was compiled by a national focal point from country census data or administrative records. Data validation and indicator calculation were undertaken by respective WHO Regional Office as well as by the Nutrition Policy and Scientific Advice Unit in the WHO Department of Nutrition for Health and Development in Geneva, Switzerland.
Data sources	Data are collected at country level from routine administrative records such as nationally representative workforce surveys, and data from professional registration bodies and higher education training institutions. Data sources are listed below in descending order of preference for data reporting. Since individuals may be enumerated in more than one of these data collections, use of one data source is recommended unless avoidance of multiple counting of individuals can be guaranteed.
	1. National workforce surveys or census
	Nationally representative workforce surveys or census that classify and identify dietitians and nutritionists separately is the preferred method of data collection due to completeness of ascertainment of workforce participation across all sectors. This classification should reflect the definitions and training defined in this guidance.
	2. Professional registration or certification data
	National registration or certification registries of individual nutrition professionals provide suitable workforce data if registration or certification is compulsory for employment in the profession. However, ascertainment may be overestimated by registered or certified individuals not currently employed, and may be underestimated if registration or certification is not compulsory. If there is a national database or registry, there should be regular assessment of completeness using census data, professional association registers, facility censuses, and other suitable means.
	3. Facility surveys
	When routine administrative records are not available, aggregate data from occasional national surveys of nutrition workforce in specific facilities may be used to provide alternative data. Selection of facilities will require knowledge of types of employment for nutrition professionals. Likely services include health, education, social services and agriculture sector across government, private and NGO sectors.
	4. Graduations from higher education training institutions
	In countries with an emerging nutrition professional workforce, and without other means of collecting nutrition workforce data, aggregate national data on graduations from universities and other higher education training institutions within and outside the country may be used to indicate nutrition workforce capacity. Courses counted would need to provide appropriate training as defined in this guidance. Aggregation of graduate numbers should be on a cumulative basis from establishment of the courses in the country or participation in training overseas. This source of data is suggested only as an interim measure, since it does not take into account whether graduates are employed. Countries initially reporting this type of data would be expected to develop one of the more direct methods of determining the trained, employed nutrition professional workforce.
Guidance on data collection	Operationalizing the indicator requires Member States to ascertain and report how many trained nutritionists and dietitians work in nutrition-related areas in both governmental and non-governmental sectors in the country.
	A selection of recommended data sources is specified above to encourage use of standard methods for reporting these data as their response to the GNPR. This will allow for comparability within countries over time and between countries. Member States should specify the data source and to maintain this in future surveys for trend analysis, whilst moving towards harmonization between countries of methodologies for measuring the indicator.
Guidance on reporting	The minimal data requirement is for nationally representative data. When available, disaggregated data could be presented by within country states or regions, rural/urban locations, public/private and service sectors.

P Report on Developing and validating an indicator on trained nutrition professionals for monitoring progress of the Global Nutrition Monitoring Framework (GNMF) indicators. 2017.

#### 4.3.2 International Code of Marketing of Breast-milk Substitutes

The International Code of Marketing of Breast-milk Substitutes is an international health policy framework for breastfeeding promotion adopted by the World Health Assembly in 1981 (88). The Code was developed as a global public health strategy and recommends restrictions on the marketing of breast-milk substitutes, such as infant formula, to ensure that mothers are not discouraged from breastfeeding and that substitutes are used safely if needed. The Code also covers ethical considerations and regulations for the marketing of feeding-bottles and teats. A number of subsequent Health Assembly resolutions have further clarified or extended certain provisions of the Code.

The Code and subsequent resolutions were adopted as a set of international recommendations, not regulations. As such, governments of Member States are expected to pass legislation, regulations and/or other suitable measures to give effect to the Code and the subsequent relevant resolutions within their territories.

Indicator name	Regulation of marketing of breast-milk substitutes.
Definition	This indicator is defined as whether the country has legislation/regulations fully implementing the International Code of Marketing of Breast-milk Substitutes (resolution WHA 34.22) ( <i>88, 89</i> ) and subsequent relevant Health Assembly resolutions.
Method of estimation	This indicator is calculated as the number of countries that have adopted comprehensive legislation (law, regulation, decree, etc.) for national implementation of the International Code of Marketing of Breast-milk Substitutes and subsequent relevant resolutions adopted by the Health Assembly. Currently, countries are categorized as:
	<ul> <li>"full provisions in law"</li> </ul>
	<ul> <li>"many provisions in law"</li> </ul>
	<ul> <li>"few provisions in law"</li> </ul>
	<ul> <li>"no legal measures"</li> </ul>
	– "no information"
	A harmonized scoring system is being developed and will be available for future report
Data availability	The Global database on the Implementation of Nutrition Action (GINA) is providing valuable information on the implementation of numerous nutrition policies and interventions. GINA contains information collected from a variety of sources and invites users to directly submit their data. Users can share information on how programmes are implemented, including country adaptations and lessons learnt.
Data sources	WHO Code Survey 2014–2015
	WHO Global database on the Implementation of Nutrition Action (GINA)
	<ul> <li>WHO Status report on country implementation of the International Code of Marketing of Breast-milk Substitutes (2013)</li> </ul>
	Relevant partner databases (e.g. UNICEF, International Code Documentation Centre (ICDC)).
Guidance on reporting	Countries should submit any new legislation, regulations, or decrees related to the Code into GINA.

#### 4.3.3 Maternity protection laws or regulations

Pregnancy and maternity are especially vulnerable times for working women and their families. Expectant and nursing mothers require special protection to prevent potential adverse effects on them and their infants. They need adequate time to give birth, to recover from delivery, and to breastfeed their children. They also require protection to ensure that they will not lose their jobs because of pregnancy or maternity leave. Such protection not only ensures a woman's equal access and right to employment, it also ensures economic sustainability for family's well-being. Returning to work after maternity leave has been identified as a significant cause for never starting breastfeeding, early cessation of breastfeeding and lack of exclusive breastfeeding. In most low- and middle-income countries, maternity leave is limited to formal sector employment or is not always provided in practice.

The International Labour Organization (ILO) Maternity Protection Convention 2000 (N°.183) provides 14 weeks of maternity benefit (90, 91). Women who are absent from work on maternity leave should be entitled to a cash benefit which ensures that they can maintain themselves and their child in healthy conditions. Breastfeeding mothers should be provided with the right to one or more daily breaks or a daily reduction of hours of work to breastfeed her child. The period during which nursing breaks or the reduction of daily hours of work are allowed, their number, the duration of nursing breaks and the procedures for the reduction of daily hours of work should be determined by national law and practice. These breaks or the reduction of daily hours of work should be counted as working time and remunerated accordingly.

Each Member State should ensure Maternity Protection Recommendation, 2000 (No. 191) and examine periodically, in consultation with the representative organizations of employers and workers, the appropriateness of extending the period of leave referred to in Article 4 or of increasing the amount or the rate of the cash benefits referred to in Article 6 of the Convention (90, 91).

Indicator name	Maternity protection.
Definition	This indicator is defined as whether the country has maternity protection laws or regulations in place consistent with the International Labour Organization's (ILO) Maternity Protection Convention 183 and Recommendation 191.
Method of estimation	This indicator is calculated as whether the country has adopted legislation (law, regulation, decree, etc.) for national implementation of maternity and paternity protection in line with ILO guidance. It is expressed as "Yes" or "No". A scale is under development for later use.
Data availability	ILO maintains the TRAVAIL Database of Conditions of Work and Employment Laws
	The maternity protection database contains information on the principal legislative measures adopted in Member States to protect the health and welfare of working women during pregnancy, childbirth and breastfeeding, and to ensure that their employment is protected and that they are not subject to discrimination.
Data sources	Member States reporting to ILO.
Guidance on reporting	Countries should submit any new legislation, regulations, or decrees related to the Maternity Protection into GINA.

### <u>REFERENCES</u>

- 1. WHO. 2014. Comprehensive Implementation Plan on Maternal Infant and Young Child Nutrition. Geneva.
- 2. WHO. 2014. Maternal, infant and young child nutrition: development of the core set of indicators. Report by the Secretariat, 21 November 2014.
- 3. WHO. 2014. Indicators for the Global Nutrition Monitoring Framework on Maternal, Infant and Young Child Nutrition (24 November 2014).
- 4. WHO. 2015. Indicators for the Global Monitoring Framework on Maternal, Infant and Young Child Nutrition (30 March 2015).
- 5. WHO. 2015. Report on WHO Informal Consultation with Member States and UN Agencies on the Global Monitoring Framework on MIYCN, Geneva 16–17 April 2015.
- 6. WHO. 2013. A draft framework for the global monitoring of the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition (6 September 2013). Informal Consultation with Member States and UN Agencies on a Proposed Set of Indicators for the Global Monitoring Framework for Maternal, Infant and Young Child Nutrition. 30 September to 1 October 2013.
- 7. WHO. 2012. Sixty-fifth World Health Assembly. Geneva, 21–26 May 2012. Resolutions and Decisions Annexes. WHA65/2012/REC/1.
- 8. UNICEF. 1998. The state of the world's children. New York: Oxford University Press; 1998 (Available from: <u>http://www.unicef.org/sowc98/pdf.htm</u>).
- 9. UNICEF, WHO, The World Bank. 2017. Levels and trends in child malnutrition: UNICEF-WHO-The World Bank joint child malnutrition estimates.
- 10. Steer PJ. 2000. Maternal hemoglobin concentration and birth weight. Am J Clin Nutr. 71 (5 Suppl.): 1285S-7S.
- 11. Kozuki N, Lee AC, Katz J, Child Health Epidemiology Reference Group. 2012. Moderate to severe, but not mild, maternal anemia is associated with increased risk of small-for-gestational-age outcomes. J Nutr. 142: 358-62.
- 12. WHO. 2014. Global nutrition targets 2025: anaemia policy brief (WHO/NMH/NHD/14.4). Geneva: World Health Organization; 2014.
- 13. WHO. 2014. WHA Global Nutrition Targets 2025: Low Birth Weight Policy Brief.
- 14. FAO, IFAD, UNICEF, WFP and WHO. 2017. The State of Food Security and Nutrition in the world 2017. Building Resilience for peace and food security. Rome, FAO.
- 15. Lamberti LM, Fischer Walker CL, Noiman A, Victora C, Black RE. 2011. Breastfeeding and the risk for diarrhea morbidity and mortality. BMC Public Health. 11 (Suppl 3): S15.
- 16. UNICEF, WHO, The World Bank. 2015. Levels and trends in child malnutrition: UNICEF-WHO-The World Bank joint child malnutrition estimates.
- 17. Checkley W, Buckley G, Gilman RH, Assis AM, Guerrant RL, Morris SS, Mølbak K, Valentiner-Branth P, Lanata CF, Black RE; Childhood Malnutrition and Infection Network. 2008. Multi-country analysis of the effects of diarrhoea on childhood stunting. International Journal of Epidemiology. 37: 816-830.
- 18. Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, Mathers C, Rivera J; Maternal and Child Undernutrition Study Group. 2008. Maternal and child undernutrition: global and regional exposures and health consequences. The Lancet. 371 (9608): 243-260.
- 19. Imdad A, Bhutta ZA (2012). Maternal Nutrition and Birth Outcomes: Effect of Balanced Protein-Energy Supplementation. Paediatric and Perinatal Epidemiology. 26 (s1), 178-190.
- 20. Yu SH, Mason J, Crum J, Cappa C, Hotchkiss DR. 2016. Differential effects of young maternal age on child Growth. Glob Health Action. 9: 31171.

- 21. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, Ezzati M, Grantham-McGregor S, Katz J, Martorell R, Uauy R; Maternal and Child Nutrition Study Group. 2013. Maternal and child undernutrition and overweight in low-income and middle-income countries. The Lancet. 382(9890): 427-451.
- 22. Gulati S, Misra A, Colles SL, Kondal D, Gupta N, Goel K, Bansal S, Mishra M, Madkaikar V, Bhardwaj S. 2013. Dietary intakes and familial correlates of overweight/obesity: a four-cities study in India. Ann Nutr Metab. 62: 279-90.
- 23. Yajnik CS. 2002. The lifecycle effects of nutrition and body size on adult adiposity, diabetes and cardiovascular disease. Obesity Reviews. 3: 217-24.
- 24. Ovesen P, Rasmussen S, Kesmodel U. 2011. Effect of Prepregnancy Maternal Overweight and Obesity on Pregnancy Outcome. Obstet Gynecol. 118: 305-12.
- 25. Nommsen-Rivers et al. 2010. Delayed onset of lactogenesis among first-time mothers is related to maternal obesity and factors associated with ineffective breastfeeding. Am J Clin Nutr. September 2010. Vol 92 no. 3 574-584
- 26. CDC. 2011. National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the United States, 2011.
- 27. Daniels SR, Arnett DK, Eckel RH, Gidding SS, Hayman LL, Kumanyika S, Robinson TN, Scott BJ, St Jeor S, Williams CL. 2005. Overweight in children and adolescents: pathophysiology, consequences, prevention, and treatment. Circulation. 111: 1999-2012.
- 28. Freedman DS, Zuguo M, Srinivasan SR, Berenson GS, Dietz WH. 2007. Cardiovascular risk factors and excess adiposity among overweight children and adolescents: the Bogalusa Heart Study. Journal of Pediatrics. 150: 12-17.
- 29. Boney CM, Verma A, Tucker R, Vohr BR. 2005. Metabolic syndrome in childhood: association with birth weight, maternal obesity, and gestational diabetes mellitus. Pediatrics. 115: e290-6.
- 30. WHO. 2002. Report of Informal Meeting to Review and Develop Indicators for Complementary Feeding. Washington, D.C.
- 31. WHO. 2008. Indicators for assessing infant and young child feeding practices. Part I, Definitions Conclusions of a consensus meeting held 6–8 November 2007 in Washington, DC, USA.
- 32. Dewey KG, Adu-Afarwuah S. 2008. Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. Maternal & Child Nutrition. 4 (Suppl 1): 24-85.
- 33. Caulfield LE, Huffman SL, Piwoz EG. 1999. Interventions to improve intake of complementary foods by infants 6 to 12 months of age in developing countries: impact on growth and on the prevalence of malnutrition and potential contribution to child survival. Food and Nutrition Bulletin. 20: 183-200.
- 34. Cairncross S, Hunt C, Boisson S, Bostoen K, Curtis V, Fung IC, Schmidt WP. 2010. Water, sanitation and hygiene for the prevention of diarrhoea. International Journal of Epidemiology. 39 (suppl 1): i193-i205.
- 35. Dangour AD, Watson L, Cumming O, Boisson S, Che Y, Velleman Y, Cavill S, Allen E, Uauy R. 2013. Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children. Cochrane Database of Systematic Reviews 2013, Issue 8. Art. No.: CD009382. DOI: 10.1002/14651858.CD009382.pub2.
- 36. Sanghvi TG, Harvey PW, Wainwright E. 2010. Maternal iron–folic acid supplementation programs: Evidence of impact and implementation. Food and Nutrition Bulletin. 31(Supplement 2): 100-107.
- 37. Perez-Escamilla R, Martinez JL, Segura-Perez S. 2016. Impact of the baby-friendly Hospital Initiative on breastfeeding and child health outcomes: a systematic review. Maternal & Child Nutrition. 12: 402-417.
- 38. Haider R, Saha KK. 2016. Breastfeeding and infant growth outcomes in the context of intensive peer counselling support in two communities in Bangladesh. Int Breastfeed J. 11: 18.

- 39. Menon P, Nguyen PH, Saha KK, Khaled A, Kennedy A, Tran LM, Sanghvi T, Hajeebhoy N, Baker J, Alayon S, Afsana K, Haque R, Frongillo EA, Ruel MT, Rawat R. Impacts on Breastfeeding Practices of At-Scale Strategies that Combine Intensive Interpersonal Counseling, Mass Media, and Community Mobilization: Results of Cluster-Randomized Program Evaluations in Bangladesh and Vietnam. PLoS Med. 2016; 25;13: e1002159.
- 40. Menon P, Nguyen PH, Saha KK, Khaled A, Sanghvi T, Baker J, Afsana K, Haque R, Frongillo EA, Ruel MT, Rawat R. Combining Intensive Counseling by Frontline Workers with a Nationwide Mass Media Campaign Has Large Differential Impacts on Complementary Feeding Practices but Not on Child Growth: Results of a Cluster-Randomized Program Evaluation in Bangladesh. J Nutr. 2016;146: 2075-2084.
- 41. Sunguya BF, Poudel KC, Mlunde LB, Shakya P, Urassa DP, Jimba M, Yasuoka J. 2013. Effectiveness of nutrition training of health workers toward improving caregivers' feeding practices for children aged six months to two years: a systematic review. Nutrition Journal. 12: 66. http://doi.org/10.1186/1475-2891-12-66
- 42. Saha KK, Khaled A, Chowdhury AH, Kennedy A, Tyagi P, Nguyen PH, Rawat R, Menon P. Alive & Thrive Bangladesh: Impact Evaluation 2014 Final Report. Dhaka: 2015.
- 43. Lutter CK. 2013. The International Code of Marketing of Breast-milk Substitutes: lessons learned and implications for the regulation of marketing of foods and beverages to children. Public Health Nutrition. 16: 1879-84.
- Cattaneo A, Burmaz T, Arendt M, Nilsson I, Mikiel-Kostyra K, Kondrate I, Communal MJ, Massart C, Chapin E, Fallon M. 2010. Protection, promotion and support of breast-feeding in Europe: progress from 2002 to 2007. Public Health Nutrition. 13: 751-9.
- 45. Bick DE, MacArthur C, Lancashire RJ. 1998. What influences the uptake and early cessation of breast feeding? Midwifery. 14: 242-247.
- 46. Baker M, Milligan K. 2008. Maternal employment, breastfeeding, and health: Evidence from maternity leave mandates. Journal of Health Economics. 27: 871-887.
- 47. Agunbiade OM, Ogunleye OV. 2012. Constraints to exclusive breastfeeding practice among breastfeeding mothers in Southwest Nigeria: implications for scaling up. International Breastfeeding Journal. 7: 5.
- 48. Perera PJ, Ranathunga N, Fernando MP, Sampath W, Samaranayake GB. 2012. Actual exclusive breastfeeding rates and determinants among a cohort of children living in Gampaha district Sri Lanka: A prospective observational study. International Breastfeeding Journal. 7: 21.
- 49. Koujianou Goldberg P, Pavcnik N. 2003. The response of the informal sector to trade liberalization. Journal of Development Economics. 72: 463-496.
- 50. Ogbuanu C, Glover S, Probst J, Liu J, Hussey J. 2011. The effect of maternity leave length and time of return to work on breastfeeding. Pediatrics. 127: e1414-e1427.
- 51. WHO. 2008. Training Course on Child Growth Assessment. Geneva, WHO, 2008.
- 52. WHO. 1995. Physical status: the use and interpretation of anthropometry: Report of a WHO Expert Committee. Technical Report Series No. 854.
- 53. Cogill, Bruce. 2003. Anthropometric Indicators Measurement Guide. Washington, DC: Food and Nutrition Technical Assistance (FANTA) Project, FHI 360.
- 54. WHO. 2015. The global prevalence of anaemia in 2011. Geneva: World Health Organization.
- 55. Centers for Disease Control and Prevention. 1989. Criteria for anemia in children and childbearing-aged women. MMWR Morb Mortal Wkly Rep. 38: 400-404.
- 56. United Nations Standing Committee on Nutrition. 2010. Sixth report on the world nutrition situation. Geneva, 2010.
- 57. Sullivan KM, Mei Z, Grummer-Strawn L, Parvanta I. 2008. Hemoglobin adjustments to define anemia. Tropical Medicine and International Health. 13: 1-5.

- 58. Stevens GA, Finucane MM, De-Regil LM, Paciorek CJ, Flaxman SR, Branca F, Peña-Rosas JP, Bhutta ZA, Ezzati M; Nutrition Impact Model Study Group (Anaemia). 2013. Global, regional, and national trends in haemoglobin concentration and prevalence of total and severe anaemia in children and pregnant and non-pregnant women for 1995–2011: a systematic analysis of population-representative data. The Lancet Glob Health. 1: e16-e25.
- 59. Sharman, Almaz. 2000. Anemia testing in population-based surveys: General information and guidelines for country monitors and program managers. Calverton, Maryland USA: ORC Macro.
- 60. WHO. 2012. Comprehensive implementation plan on maternal, infant and young child nutrition. Annex 2. A65/11–26 April 2012 and A65/11 Corr.1–11 May 2012.
- 61. WHO. 1992. International statistical classification of diseases and related health problems, tenth revision, World Health Organization, Geneva, 1992.
- 62. Blanc A, and Wardlaw T. 2005. Monitoring Low Birth Weight: An evaluation of international estimates and an updated estimation procedure. Bulletin of the WHO. 83: 178–185.
- 63. UNICEF and WHO. 2004. Low Birthweight: Country, regional and global estimates. UNICEF, New York, 2004.
- 64. WHO. 1999. WHO multicentre growth reference study: Measurement and standardization protocol. Working paper No. 5.
- 65. WHO. 2016. Report of the commission on ending childhood obesity. Geneva, Switzerland.
- 66. Nishtar S, Gluckman P, Armstrong T. 2016. Ending childhood obesity: a time for action. The Lancet. 387 (10021): 825-27.
- 67. WHO. 2012. Global database on Child Growth and Malnutrition. 2012 Joint child malnutrition estimates levels and trends. UNICEF-WHO-The World Bank project. Geneva: World Health Organization, 2012.
- 68. WHO. 2001. Infant and young child nutrition. Geneva: World Health Organization; World Health Assembly Resolution WHA54.2.
- 69. Victora CG, Smith PG, Vaughan JP, Nobre LC, Lombardi C, Teixeira AM, Fuchs SM, Moreira LB, Gigante LP, Barros FC. 1987. Evidence for protection by breast-feeding against infant deaths from infectious diseases in Brazil. Lancet. 2: 319-22.
- 70. Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N, Rollins NC; Lancet Breastfeeding Series Group. 2016. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. Lancet. 387 (10017): 475-90.
- 71. WHO Multicentre Growth Reference Study Group. 2006. WHO child growth standards. Length, height for-age, weight-for-length and body mass index-for age. Methods and development. Geneva: World Health Organization, 2006.
- 72. WHO-MCEE methods and data sources for child causes of death 2000–2015. Global Health Estimates Technical Paper WHO/HIS/IER/GHE/2016.1. Available at: <u>http://www.who.int/healthinfo/global burden disease/estimates/en/index3.html</u>.
- 73. Munos MK, Walker CL, Black RE. 2010. The Effect of Oral Rehydration Solution and Recommended Home Fluids on Diarrhoea Mortality. Int. J Epidemiol. 39(Suppl 1): i75-i87.
- 74. Fischer Walker, C. L., and R. E. Black. 2010. Zinc for the Treatment of Diarrhoea: Effect on diarrhoea morbidity, mortality and incidence of future episodes. Int. J Epidemiol; 39: i63-i69.
- 75. NCD Risk Factor collaboration. 2017. Worldwide trends in body mass index, underweight, overweight, and obesity from 1975–2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. Lancet. 10 October 2017. DOI: <u>http://dx.doi.org/10.1016/S0140-6736(17)32129-3</u>.
- 76. WHO. Adolescent birth rate: Data by WHO region. Available at: <u>http://apps.who.int/gho/data/view.</u> <u>main.1610A?lang=en</u>.
- 77. Population Council. 2007. Providing new opportunities to adolescent girls in socially conservative settings: the Ishraq program in rural Upper Egypt. New York, 2007.

- 78. WHO. 2011. WHO Guidelines on Preventing Early Pregnancy and Poor Reproductive Outcomes among Adolescents in Developing Countries. Geneva, Switzerland.
- 79. WHO. 2016. Global Health Observatory (GHO) data. Obesity among women: situation. <u>http://www.who.int/gho/urban\_health/physiological-risk-factors/women\_obesity/en/</u>.
- 80. WHO. 2010. Indicators for assessing infant and young child feeding practices part 2: measurement.
- 81. Resolution A/RES/64/292. 2010. United Nations General Assembly, July 2010.
- 82. WHO and UNICEF. Joint Monitoring Programme (JMP) for Water Supply and Sanitation. Available at: <u>http://washdata.org</u>.
- 83. UN WATER. Global Expanded Water Monitoring Initiative. Available at: http://www.unwater.org/gemi/en/.
- 84. WHO and UNICEF. 2009. Baby-friendly Hospital Initiative: revised, updated and expanded for integrated care. Section 1, Background and implementation. Geneva Switzerland.
- 85. Hughes R, Shrimpton R, Recine E, Margetts B. A competency framework for global public health nutrition workforce development: A background paper. 2011. World Public Health Nutrition Association. Accessible <a href="http://www.wphna.org/htdocs/downloadsapr2012/12-03%20WPHNA%20Draft%20competency%20">http://www.wphna.org/htdocs/downloadsapr2012/12-03%20WPHNA%20Draft%20competency%20</a> <a href="http://standards%20report.pdf">standards%20report.pdf</a>.
- 86. Association for Nutrition Registering as Registered Nutritionist. The UK Voluntary Register of Nutritionists Registration <u>http://www.associationfornutrition.org</u>.
- 87. Ellahi B, Annan R, Sarkar S, Amuna P, Jackson AA. Building systemic capacity for nutrition: training towards a professionalised workforce for Africa. Proc Nutr Soc. 2015 Nov;74 (4):496–504.
- 88. WHO. 1981. Resolution WHA27.43: Handbook of Resolutions and Decisions of the World Health Assembly and the Executive Board, Volume II, 4th Ed., Geneva, 1981.
- 89. WHO. 1981. International Code of Marketing of Breast-milk Substitutes. Geneva 1981.
- 90. ILO. 2010. Maternity at work: a review of national legislation. International Labour Office, Conditions of Work and Employment Branch. Second edition. Geneva: ILO, 2010.
- 91. ILO. 2013. Working conditions laws report 2012: A global review; International Labour Office. Geneva: ILO, 2013.
- 92. WHO. 2001. Iron Deficiency Anaemia Assessment, Prevention and Control: A guide for programme managers. WHO/NHD/01.3.
- Neufeld L, García-Guerra A, Sánchez-Francia, D, Newton-Sánchez O, Ramírez-Villalobos MD, Rivera-Dommarco J. 2002. Hemoglobin measured by Hemocue and a reference method in venous and capillary blood: A validation study. Salud Publica Mex. 44: 219-227.
- 94. Ojengbede OA1, Okonkwo SN, Morhason-Bello IO. 2008. Comparative evaluation of haemoglobin estimation amongst pregnant women in Ibadan: Hemocue B haemoglobin analyzer versus haemiglobincyanide (standard) method as the gold standard. Afr J Reprod Health. 12:153-9.
- 95. Helen Keller International. How to assess iron deficiency anemia and use the HemoCue? 2002, New York, USA.
- 96. WHO. 2011. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Vitamin and Mineral Nutrition Information System. Geneva, World Health Organization, 2011 (WHO/NMH/NHD/ MNM/11.1).

## SUMMARY OF THE GLOBAL NUTRITION MONITORING FRAMEWORK INDICATORS

ANNEX

### Table A1: Summary of Global Nutrition Monitoring Framework indicators for the WHA global nutrition targets, intermediate outcome, process, and policy environment and capacity

	Indicator name	Indicator type	Definition	Included in CHI	Data sources	Measurement frequency	Disaggregation
TR1	Children under 5 years who are stunted	Target	Percentage of stunted (moderate and severe) children aged 0–59 months (moderate = height-for-age between <-2 and >-3 standard deviations from the WHO Child Growth Standards median; severe = height-for-age below -3 standard deviations from the WHO Child Growth Standards median)	Yes	Population-based household surveys	3–5 years	Age, sex, mothers' education, place of residence, socioeconomic status
TR2	Anaemia prevalence in women of reproductive age	Target	Percentage of women aged 15–49 years with a haemoglobin level less than 120 g/L for non-pregnant women and lactating women, and less than 110 g/L for pregnant women, adjusted for altitude and smoking	Yes	Population-based health surveys	3–5 years	Age, level of education, place of residence, reproductive status (pregnant, lactating), socioeconomic status
							Also: haemoglobin <80 g/L for non-pregnant women and lactating women, and <70 g/L for pregnant women (severe anaemia)
TR3	Incidence of low birth weight among new-borns	Target	Percentage of live births that weigh less than 2500 g.	Yes	Population-based health surveys and data from administrative/ information systems. Routine facility information systems	Continuous	Sex, preterm status, mothers' education, place of residence, socioeconomic status
TR4	Children aged under 5 years who are overweight	Target	Prevalence of weight-for-height in children aged 0–59 months defined as above +2 standard deviations of the WHO Child Growth Standards median	Yes	Population-based household surveys	3–5 years	Age, sex, mothers' education, place of residence, socioeconomic status
TR5	Exclusive breastfeeding rate in infants 0–5 months of age	Target	Percentage of infants 0–5 months of age (<6 months) who are fed exclusively with breast milk	Yes	Household surveys, specific population based surveys	3–5 years	Sex, mothers' education, place of residence, socio- economic status

	Indicator name	Indicator type	Definition	Included in CHI	Data sources	Measurement frequency	Disaggregation
TR6	Children under 5 years who are wasted	Target	Percentage of wasted (moderate and severe) children aged 0–59 months (moderate = weight-for-height between <-2 and >-3 standard deviations of the WHO Child Growth Standards median; severe = weight- for-height below -3 standard deviations of the WHO Child Growth Standards median)	Yes	Population-based household surveys	3–5 years	Age, sex, mothers' education, place of residence, socioeconomic status
IO1	Children with diarrhoea receiving oral rehydration solution (ORS) <sup>10</sup>	Intermediate outcome	Percentage of children under 5 years of age with diarrhoea in the last two weeks receiving ORS (fluids made from ORS packets or pre-packaged ORS fluids)	Yes	Household surveys	3–5 years	Age, sex, mothers' education, place of residence, socioeconomic status
102	Proportion of women aged 15– 49 years with low body mass index (<18.5 kg/m <sup>2</sup> )	Intermediate outcome	Percentage of women aged 15–49 years with low BMI (<18.5 kg/m <sup>2</sup> )	Yes	Household surveys	3–5 years	Age, level of education, place of residence, socioeconomic status
IO3	Number of births during a given reference period to women aged 15-19 years/1000 women aged 15–19 years	Intermediate outcome	Annual number of births to women aged 15–19 years per 1000 women in that age group. It is also referred to as the age-specific fertility rate for women aged 15–19 years	Yes	Civil registration systems with full coverage, population census, household surveys	Annual	Marital status (when possible, also capture girls <15 years), level of education, place of residence, socioeconomic status
104	Proportion of overweight and obese women 18+ years of age with body mass index ≥25 kg/m <sup>2</sup>	Intermediate outcome	Percentage of adults (18+ years) who are overweight (defined as having a BMI >25 kg/m <sup>2</sup> ) and obese (defined as having a BMI >30 kg/m <sup>2</sup> )	Yes	Household surveys	3–5 years	Age, level of education, place of residence, socioeconomic status

<sup>10</sup> The original indicator name in the GNMF is "Prevalence of diarrhoea in children <5 years of age". This indicator is included in the 100 Core Health Indicators.

<sup>11</sup> 100 Core Health Indicators include "Overweight and obesity in adults (also: adolescents).

	Indicator name	Indicator type	Definition	Included in CHI	Data sources	Measurement frequency	Disaggregation
105	Proportion of overweight in school-age children and adolescents (5–19 years)	Intermediate outcome	Prevalence of overweight in school-age children and adolescents is defined as the percentage of children aged 5–19 years with sex-specific BMI-for-age above +1 SD from the WHO 2007reference median. Prevalence of obesity in school-age children and adolescents is defined as the percentage of children aged 5–19 years with sex-specific BMI-for-age above +2 SD from the WHO 2007 reference median	+/-"	Population- based (preferably nationally representative) survey	3–5 years	Age, sex, mother's education, place of residence, socioeconomic status
PR1	Minimum dietary diversity among children aged 6–23 months	Process	Percentage of children aged 6–23 months of age who receive foods from ≥5 food groups	Yes	Population based household surveys including dietary intake	3–5 years	Age, sex, mother's education, place of residence, socioeconomic status
PR2	Proportion of population using a safely managed drinking service	Process	Population using a basic drinking-water source (piped water into dwelling, yard or plot; public taps or standpipes; boreholes or tube wells; protected dug wells; protected springs and rainwater) which is located on premises and available when needed; free of faecal (and priority chemical) contamination and/or regulated by a competent authority	Yes	Household surveys, population census, data from administrative sources or regulatory frameworks	Biennial	Place of residence, socioeconomic status
PR3	Proportion of population using a safely managed sanitation service <sup>12</sup>	Process	Population using an improved sanitation facility at the household level that is not shared with other households and where excreta is safely disposed of in situ or treated off site	Yes	Household surveys, population census, data from administrative sources or regulatory frameworks	Biennial	Place of residence, socioeconomic status
PR4	Any antenatal iron supplementation	Process	Proportion of women who consumed any iron-containing supplements during the current or past pregnancy within the last 2 years	No	DHS, MICS, national health and nutrition surveys (NHNS) and health management information systems HMIS	3–5 years	Maternal education, place of residence, and socioeconomic status (e.g., wealth quintile)
PR5	Percentage of births in baby friendly facilities	Process	Births at baby friendly hospitals	No	Global nutrition policy review	3–5 years	Place of residence

60

<sup>12</sup> The definition of this indicator in the CHI list incorporates "...including a handwashing facility with soap and water

	Indicator name	Indicator type	Definition	Included in CHI	Data sources	Measurement frequency	Disaggregation
PR6	Availability of national-level provision for breastfeeding counselling services in public health and/ or nutrition programmes	Process	This indicator is defined as availability of a national program that include provision for delivering breastfeeding counselling services to mothers of infants 0–23 months of age through health systems or other community-based platforms	No	GNPR, Nutri-Dash, WBTi	3–5 years	Not applicable
PE1	Nutrition professionals density	Policy environment and capacity	This indicator is defined as the number of nutrition professionals per 100,000 population in the country in a specified year	No	National workforce surveys or census, Professional registration or certification data, Facility surveys, Graduations from higher education training institutions	3–5 years	Regions, rural/urban locations, public/private and service sectors
PE2	Number of countries with legislation/ regulations fully implementing the International Code of Marketing of Breast-milk Substitutes (resolution WHA34.22) and subsequent relevant resolutions adopted by the Health Assembly	Policy environment and capacity	International Code of Marketing of Breastmilk Substitutes	No	GINA	Biennial	Not applicable
PE3	Number of countries with maternity protection laws or regulations in place	Policy environment and capacity	Maternity protection	No	Maternity and paternity at work: law and practice across the world. International Labour Office, Geneva: ILO, 2014	Annual	Not applicable

## **ANNEX 2**

## ESSENTIALS OF LENGTH/ HEIGHT MEASUREMENTS

nthropometry is a key component to assess nutrition status in children and adults. Anthropometric data for infants and children reflect nutritional status and dietary adequacy and are used to track trends in growth and development over time. The common anthropometric measurements include weight, length/height, mid-upper arm circumference (MUAC), and triceps skinfolds. Specific measurements are taken depending on the age of the subject and purpose. The anthropometric measurements are done following standard protocol and procedures (*51–53*).

The Training Course on Child Growth Assessment is a tool for the application of the WHO Child Growth Standards. It is intended primarily for health care providers who measure and assess the growth of children or who supervise these activities. The course is designed for use over 3.5 days. It teaches how to measure weight, length and height, how to interpret growth indicators, investigate causes of growth problems and counsel caregivers. The users can download or view an anthropometry training video (available via: <a href="http://www.who.int/childgrowth/training/en/">http://www.who.int/childgrowth/training/en/</a>). This video describes the anthropometric measurement procedures and how to calibrate the measuring equipment. It is available in English, French and Spanish.

The course materials on "Training Course on Child Growth Assessment: WHO Child Growth Standards" can be downloaded from the following links:

#### **Module A: Introduction**

http://www.who.int/childgrowth/training/module a introduction.pdf?ua=1

#### Module B: Measuring a Child's Growth

http://www.who.int/childgrowth/training/module\_b\_measuring\_growth.pdf?ua=1\_\_\_\_\_

#### Module G: Facilitator's Guide

http://www.who.int/childgrowth/training/module\_g\_facilitator\_guide.pdf?ua=1

#### Module H: Course Director's Guide

http://www.who.int/childgrowth/training/module\_h\_directors\_guide.pdf?ua=1

#### A job aid on "Measuring and weigh a child" is available at:

http://www.who.int/childgrowth/training/jobaid\_weighing\_measuring.pdf?ua=1

#### Other course modules and job aids are also available at:

#### http://www.who.int/childgrowth/training/en/

**Age:** The child's accurate age is required for sampling, deciding on whether the child is measured standing or reclining for height or length, and for converting height and weight into the standard indices. At the time of measurement, an age estimate is needed for decisions on sampling and for the position on the measuring board. It is recommended the enumerators use simple methods to approximate the age and that the data analyst calculates the age using a computer program which will require the date of birth and date of measurement.

For age determination, the enumerator needs to examine documentary evidence of the birth date (such as birth, baptismal certificate, clinic care or horoscope). Cross checking is necessary even if the mother knows the birth date as error in recall is common. Where there is a general registration of births and where ages are generally known, the recording of age is a straightforward procedure, with age measured to the nearest month or year. For example, an infant whose date of birth is 13 July, 1996 could be recorded as being 5 months (completed) if seen between 13 December, 1996 and 12 January, 1997 (both dates inclusive). Similarly, a child born on 13 July, 1995 could be recorded as 5 years (completed) old if seen between 13 July 2001 and 12 July, 2002 (both dates inclusive). If dates cannot be recalled, use of a local calendar will assist mothers in recalling the date of birth.<sup>13</sup> Construction of the local calendar should be done prior to the survey and tested using the enumerators.

<sup>&</sup>lt;sup>13</sup> FAO. Guidelines for Estimating the Month and Year of Birth of Young Children. 2008. Rome, Italy.

The WHO child age calculator (a rotating disk mounted on a calendar in PVC material) for calculating child age is part of the course materials that can be made available in WHO Regional Offices when the training of trainers workshops are conducted in the respective Regions.

#### Recumbent length for infants and children 0–23 months

Children 0–23 months of age should be placed supine on the length measuring board. The recorder should hold the child's head and apply gentle traction to bring the head into contact with the fixed headboard. The examiner should hold the child's legs by placing one hand gently but firmly over the knees with the child's toes pointing directly upward. The examiner should apply gentle pressure to the legs to prevent flexion of the knees and bring the movable footboard to rest firmly against the child's heels. The measurement is recorded to the nearest 0.1 cm from the measuring board. It may be necessary to have a third person help with restless infants to take the measurement as quickly as possible while maintaining accuracy.

#### Standing height for children 24 months and older

The child should be told to look straight ahead at the mother who should stand in front of the child. The child's line of sight should be parallel with the ground. Measurer's left hand should be put under the child's chin. This should be done carefully so that the child's mouth or ears are not covered by the measurer's hand. The shoulders of the child should be at the same level, the hands are at the child's side, and the head, shoulder blades and buttocks are against the measuring board/wall. With the right hand, the measurer should lower the headpiece on top of the child's head. It should be ensured that the measuring board is pushed through the child's hair. For detail on anthropometric measurements, see WHO training guidelines (links are provided above) and Cogill B 2003 (*53*).

A description of the length/height board, training and standardization procedures on anthropometry and essential steps for weighing and measuring a child has been provided below.

#### Length/height measuring board

The measuring board has a 200-cm capacity (collapses to 85 cm) and has 0.1 cm increments. It is important that the materials are durable, lightweight and, if wooden, the wood should be well seasoned to guard against warping. The board is portable, water-resistant and has an adjustable, removable nylon shoulder strap. These are usually locally produced following specifications of Shorr Productions (Olney, Maryland, USA).

#### Training and standardization on anthropometric techniques

Accurate anthropometric measurement is a skill requiring specific training. Training requires step-by-step procedures to follow when taking measurements. The training of personnel on specific measurement and recording techniques should include not only theoretical explanations and demonstrations, but also provide an opportunity for participants to practice the measurement techniques, as well as reading and recording the results.

Once all personnel have adequately practiced the measurement and recording techniques, and feel comfortable with their performance, standardization exercises should be carried out to ensure that all interviewers acquire the skills necessary to collect high quality anthropometric data. Standardization methods help ensure that the measurements will be correct and make comparisons possible. Comparisons may be done between data collected from different areas of a country, between different surveys or between measurements and the reference standards. None of these comparisons will be possible without a standard method for taking measurements. Details on anthropometric training and standardization are available WHO Training Course on Child Growth Assessment (*51, 52*) and Cogill B 2003 (*53*). Some of the critical steps for anthropometric measurements are presented next page.

#### Essential steps for weighing and measuring a child:

- Two trained people required: When possible, two trained people should measure a child's height and length. The measurer holds the child and takes the measurements. The assistant helps hold the child and records the measurements on the questionnaire. If only one trained person is available to take the measurements, then the child's mother can help. The measurer would also record the measurements on the questionnaire.
- Measuring board and scale placement: There will usually be several choices on where to place the measuring board or scale, but the choice should be made carefully. Be sure that you have a sturdy, flat surface for measuring boards, a strong place to hang scales from and adequate light so the measurements can be read with precision.
- When to weigh and measure: Weighing and measuring should not be the first thing you do when you start
  an interview. It is better to begin with questions that need to be answered. This helps make the mother and
  child feel more comfortable before the measurements begin. Always start with asking age of the child, then get
  weight and length/height at the end.
- Weigh and measure one child at a time: You should complete the questions and measurements for one child at a time. This avoids potential problems with mix-ups that might occur if you have several children to measure.
- Control the child: When you are taking weight and length/height measurements, the child needs to be as calm as possible. A child who is excited or scared can make it difficult to get an accurate measurement.
- Recording measurements: All measurements should be recorded in pencil. If a mistake is made when recording
  a measurement, it can be corrected. If data collection is done electronically, always do a consistency check for
  indicator results.

66

# ANNEX 3

## HAEMOGLOBIN ADJUSTMENT FOR SMOKERS AND PEOPLE RESIDING IN HIGH ALTITUDE

aemoglobin status should be adjusted for smokers and people residing at in high altitudes. Haemoglobin concentration increases in smokers (*57, 58*). Taking this into account, the Centers for Disease Control and Prevention (CDC) recommend adjustments to measured haemoglobin concentrations for smokers (Table A2) (*55*). Table A2 shows the values to add to normal haemoglobin cut-offs to define anaemia in smokers. Alternatively, these values can be subtracted from observed haemoglobin values. For example, a non-smoker woman with Hb 120 g/L is not anaemic while a woman who smokes >2 packs a day with the same Hb concentration is anaemic as her adjusted Hb level is (120 - 7) = 113 g/L.

<b>TABLE A2: Haemoglobin</b>	adjustment for smokers
------------------------------	------------------------

Amount smoke	Increase in haemoglobin (g/L)
½ - 1 pack/day	+3
1 - 2 pack/day	+5
>2 packs/day	+7
All smokers	+3

Source: CDC 1989.

Residing above sea level is also known to increase haemoglobin concentrations. Measured haemoglobin concentrations can be adjusted for altitude with a formula from the CDC:

Haemoglobin =  $-0.32 \times (altitude in meters \times 0.0033) + 0.22 \times (altitude in meters \times 0.0033)^2$ 

Table A3 shows the adjustment values of haemoglobin in altitudes at 500-m intervals, which is based on the above equation. Haemoglobin concentrations of people living more than 1000 m above sea level should be adjusted downwards to avoid underestimation of anaemia prevalence. For example, a woman living at sea level with Hb 120 g/L is not anaemic while a woman living at an altitude of 1500 m with the same Hb level is anaemic as her adjusted Hb level is (120 - 5) = 115 g/L.

#### TABLE A3: Haemoglobin adjustments (g/L) for altitude

Altitude (m)	Increase in haemoglobin (g/L)
<1000	0
1000	+2
1500	+5
2000	+8
2500	+13
3000	+19
3500	+27
4000	+35
4500	+45

Source: WHO 2001 (92).

#### Data sources and inclusion criteria for the database on anaemia

#### Data sources

Survey reports and publications reporting the prevalence of anaemia are collected/requested from:

- Ministries of Health through WHO regional and country offices.
- National research and academic institutions.
- Nongovernmental organizations.
- Organizations of the United Nations system.
- Regular searches of online databases, such as PubMed, Medline, Embase, Ovid, and WHO regional databases (African Index Medicus, Index Medicus for the WHO Eastern Mediterranean Region, Latin American and Caribbean Center on Health Sciences Information, Pan American Health Organization Library Institutional Memory Database, Index Medicus for South-East Asia Region).

These resources are supplemented by manual searching of articles published in non-indexed medical and professional journals and reports from principal investigators.

#### Data inclusion criteria

Survey data are extracted and included in the database only from original survey reports and publications. Surveys on any administrative level and of any population group are included if they fulfil the following criteria:

- Population based surveys (exception: facility based surveys for pregnant women, neonates, preschool and school-age children, which is strictly mentioned in the 'General Notes').
- Cross sectional surveys. Baseline values of intervention studies.
- A clearly defined survey design.
- A minimal sample size of 100 subjects.
- Determination of haemoglobin concentration (various methods) and/or indication of proportion (%) of population falling within haemoglobin cut-off levels to define anaemia.

When a potentially relevant survey is identified and the full report obtained, data are checked for consistency as part of routine quality control. If required, data holders are contacted for clarification or to obtain additional results. Available information is extracted and entered on a standard data form.

#### Haemoglobin estimation

Prevalence of anaemia among women of reproductive age group (15–49 years) should be assessed among a representative sample of subjects to generalize the results from the sample to the entire target population. As anaemia prevalence has a strong impact on public health programmes, it is important to ensure that the data collection is done with appropriate methods for estimating haemoglobin.

Most population based surveys in the recent decades used haemoglobinometer method for estimating haemoglobin (59). Haemoglobinometer to measure haemoglobin concentration has several advantages over use of haematocrit for field based surveys and is far more accurate than clinical examination. This method does not require refrigeration and transportation to the laboratory as haematocrit. The haemoglobinometer machine is light and portable and runs on batteries so it can be transported to the survey site where blood samples can be analysed in the field. Moreover, the results of the test are available immediately and provide an adequate estimation of population anaemia prevalence (93, 94).

Haemoglobin can be measured for women of reproductive age (15–49 years) during household surveys using the haemoglobinometer method. The guidelines provide detailed and practical information on haemoglobinometer,

including supplies, quality assurance, collecting a capillary blood sample (a drop of blood), and protocols to ensure the safety of survey workers and subjects (95). It also provides a training protocol and standardization exercise to ensure accuracy and consistency (reliability) of the haemoglobinometer measurements. The training protocol and standardization exercise enable trainers to correct errors and to select competent survey workers. After training and standardization of phlebotomists on the use of haemoglobinometer, the trained phlebotomists with the survey team collect a drop of blood by finger pricking of the sample women. Systematic errors resulting from insufficient training of field personnel in the use of the haemoglobinometer machines may cause significant bias in survey-based estimates of the prevalence of anaemia. Therefore, it is very important to ensure adequate and uniform training of field personnel in the use of the haemoglobinometer system. The date of assessment of haemoglobin and the haemoglobin value should be recorded on the designated area in the household questionnaire.

Demulation	N		Anaemia	
Population	Non -Anaemia -	Mild	Moderate	Severe
Non-pregnant women	120 or higher	110–119	80–109	lower than 80
(15 years of age and above)				
Pregnant women	110 or higher	100–109	70–99	lower than 70

TABLE A4: Haemoglobin levels to diagnose anaemia at sea level (g/L)

Source: WHO 2011 (96).

## ADJUSTMENT FOR LOW BIRTH WEIGHT

**ANNEX 4** 

ccurate and reliable LBW data is scarce and there are currently no global, regional, and national estimates for LBW rates. To address this gap, WHO in partnership with UNICEF and the academia (the London School of Hygiene and Tropical Medicine and Johns Hopkins University) are joining efforts to estimate national LBW rates and trends among live births<sup>14.</sup> These data will be essential to set the baseline against which WHO and Member States can assess progress towards the achievement of the WHA global target for 2025. Some of the past and ongoing activities include:

- Reviewing national level routine data (e.g., civil registration, vital statistics and HMIS data) for all countries and developing quality criteria to categorise high quality data.
- Re-analysing LBW data from DHS and MICS household surveys, including undertaking analyses to explore new methods of adjusting survey data for heaping over specific birth weights.
- Producing a combined database of LBW data from national/nationally representative sources, including adjusted household survey data and routine national data.
- Developing a model based on all input data in final database for countries without high quality data, including uncertainty ranges and trends.
- Deriving estimates to be submitted for country consultation.

Many surveys use mother's recall of subjective assessment of the infant's size at birth (i.e., very large, larger than average, average, smaller than average, very small) in addition to the birth weight data. An adjustment is done by weighting procedure in which the proportion with low birth weight in each category of size is multiplied by the total proportion of births in the corresponding category and summed to obtain overall estimates of the prevalence of low birth weight. This methodology of adjusting low birth weight prevalence provides significantly improved estimates because it attempts to correct for the bias due to underreporting of birth weight by using information on all children, including those who are not weighed (*62*). However, this has not been adopted on a large scale until recently.

The assumptions in this adjustment are: (i) the births with numerical birth weights reported are as likely to be low birth weight births as those without birth weight reported, and (ii) within the same country, the relationship between birth weight and the mother's assessment of infant's size does not depend on whether the infant was weighed. In an assessment of survey data from more than 40 countries, Blanc and Wardlaw (2005) examined these assumptions and documented that the characteristics of infants with numerical birth weights were not representative of all births (*62*). Infants who were weighed were more likely of mothers who were better educated and lived in urban areas. They were also more likely to be in a medical facility and with assistance from skilled health personnel. These characteristics are generally associated with higher birth weight and, therefore, the resulting estimates were still likely to underestimate the level of low birth weight. In addition, Blanc and Wardlaw (2005) noted significant 'heaping' of survey data of recorded birth weight on multiples of 500g (*62*). The heaping at 2500g, which is the cut-off point for low birth weight, affects the low birth weight estimates. Based on an assessment of the distribution of births weighing between 2001g and 2999g in 88 surveys, they recommended that one quarter of the births recorded as exactly 2500g should be reclassified as low birth weight.

Applying both adjustments (i.e., mother's assessment of size at birth and heaping on 2500g) is likely to yield higher estimates of the incidence of low birth weight. Results from 114 DHS and MICS surveys showed that the adjustments for birth size and for heaping resulted, on average, in an increase of 24% in the incidence of low birth weight compared with the reported data with no adjustments.

<sup>&</sup>lt;sup>14</sup> Necessary revision will be made based on ongoing work)

GLOBAL NUTRITION MONITORING FRAMEWORK OPERATIONAL GUIDANCE FOR TRACKING PROGRESS IN MEETING TARGETS FOR 2025

# **ANNEX 5**

## WEIGHT MEASUREMENTS

ach member of the field staff should have their own scale if possible, otherwise it might take longer to do measurements and complete the survey. Several scales are available, such as, UNICEF Electronic Scale (Item No. 0141015 Scale mother/child, electronic): The scale is manufactured by SECA and is a floor scale for weighing children as well as adults. It has a weighing capacity from 1 kg to 150 kg in 100 g divisions for adults. Weight of adult on scale can be stored in memory, allowing the weight of small child held by adult to show on scale indicator. For more information contact: UNICEF Supply Division; UNICEF Plads, Freeport; DK-2100 Copenhagen, Denmark; Telephone: (45) 35 27 35 27; Fax: (45) 35 26 94 21; Email: <a href="mailto:supply@unicef.org">supply@unicef.org</a>; website: <a href="mailto:www.supply.unicef.dk">www.supply.unicef.dk</a>.

The child may be weighed directly. If a child is frightened, the mother can first be weighed alone and then weighed while holding the child in her arms, and the scale will automatically compute the child's weight by subtraction. Recent experience in surveys suggests that the scale is appropriate although there have been some difficulties with heat adversely affecting the scale.

Age of a child is essential for anthropometric assessments and must be collected along with length/height and weight data as accurately as possible (See section 3.1 for details).





## OPERATIONALIZING MINIMUM DIETARY DIVERSITY (MDD) USING QUANTITATIVE DIETARY DATA

ANNEX

Steps for generating MDD from quantitative 24-hour recalls depend on the structure and content of the source data files.

The following main steps are described below:

- 1. Determine whether the child has consumed each of the eight defined food groups
- 2. Apply a minimum quantity criterion for consumption to "count"
- 3. Construct MDD

#### 1. Grouping foods and determining if the child consumed each of the eight food groups

Most nationally representative quantitative dietary data sets will have both food/ingredient-level files, listing all items consumed by individuals, and person-level files with data on nutrient intakes. In the food/ingredient levels files, items are often coded into hierarchical coding schemes with, for example, one digit indicating the food group and other digits indicating attributes and specific food items within the group. The level of detail in description of attributes provided by the coding scheme will vary by country, but for the simple categorization scheme required to construct MDD, there are only a few descriptors and distinctions required.

The following guidance is describing how to categorize "simple" foods into groups and describes options for coding of composite foods (recipes), depending on available information in the source data sets.

#### 1.1 Coding "simple" foods (one ingredient) into groups

Simple foods are usually easily assigned to a food group. In many cases, existing national-level coding schemes can be used to map most foods into the eight groups. Detailed lists of food items belonging to each group are available in WHO 2010. Details are also provided in WHO 2010 for foods and groups that are excluded from counting in MDD (for example, condiments and minor ingredients added to flavor dishes, sweets, etc.). Exclusions are based on the concept of avoiding a false inflation of healthy dietary diversity.

The WHO groups have one distinction that is not commonly found in national-level coding schemes: vitamin A-rich fruits and vegetables are separated from all other fruits and vegetables. To be included in the "vitamin A-rich fruits and vegetables" group, the food must provide at least 120 retinol equivalents (RE) per 100 g, as consumed.<sup>15</sup> At present, food composition tables may report vitamin A content in RE units, or as Retinol Activity Equivalents (RAE). For plant foods, the criterion of 120 RE is roughly equivalent to 60 RAE. This is one classification that is unlikely to be present in many country-level coding schemes.<sup>16</sup> Thus, fruits and vegetables may need to be classified on an item-by-item basis, by examining the vitamin A content of the food in the form consumed.

Main food groups in country-level coding schemes may also differ from the WHO groups in their classification of roots, tubers, and plantains. In the WHO scheme – except for vitamin A-rich yellow- and orange-fleshed sweet potatoes – starchy roots, tubers, and plantains are all classified along with grains, as starchy staple foods. Note also that in the WHO scheme, certain other starchy vegetables (for example fresh corn/maize and fresh peas) are grouped with vegetables.

<sup>&</sup>lt;sup>5</sup> 120 RE per 100 g corresponds to 15% of the Nutrient Reference Value (NRV; 800 RE) established by the Codex Alimentarius. The Codex standard for identifying a food as a "source" of any nutrient states that the food should provide any of the following: 15% per 100 g solid food; 7.5% per 100 g liquids; 5% per 100 kcal; or 15% per serving. To be identified as a "high source" the food must provide twice this amount (e.g. 30% or 240 RE/100 g solids). The NRV are set at a level that should meet the needs of approximately 97% of individuals in the age/sex group with highest needs (excluding pregnant and lactating women). For definition of "source", see Codex Alimentarius Commission, Guidelines adopted 1997, revised 2004. For definition of NRV, see Codex Alimentarius Commission, Guidelines adopted 1985, revised 1993 (for all Codex Standards, see: http://www.codexalimentarius.org/).

<sup>&</sup>lt;sup>16</sup> Some countries may have vegetable sub-groups that align very well (for example, dark green vegetables or dark green leafy vegetables and dark orange-fleshed vegetables). Such groupings can simplify the process.

#### 1.2 Composite dishes, including commercially processed foods

Composite dishes, or recipes, are coded differently in different national dietary databases containing information on consumption by individuals. In some cases, composite foods are completely disaggregated into their component ingredients, and the quantity of each ingredient consumed by the individual is reported. In other cases, individuals are reported to consume a quantity of the composite food or recipe. In the latter case, associated but separate recipe data files may or may not be available to further disaggregate data. Further, in the case of commercial food products, complete recipes are often not available. Therefore, some national data sets contain a mix of foods, ingredients, and commercial products in the files describing consumption by individuals.

Given this diversity of data structures and characteristics, detailed guidance is beyond the scope of this document. The following general guidance should allow analysts responsible for national dietary data processing to code composite dishes into the WHO food groups.

When possible, composite foods should be disaggregated into ingredients based on proportions in the recipe, and the quantity of each ingredient as consumed by the child should be calculated.<sup>17</sup> When this is not possible, foods should be coded into groups based on their main ingredient and the quantity as consumed is then assigned to the food group of the main ingredient. As noted, in many country coding schemes, food-group level coding already exists and is reflected in hierarchical country-specific food and ingredient codes.

#### 2. Apply a minimum quantity criterion for each food group to count

Once all items in the food/ingredient-level file have been coded into groups, a 10-gram minimum should be applied for consumption of the item<sup>18</sup> to "count". With the exception of breast milk,<sup>19</sup> items consumed in quantities of less than 10 grams should be dropped.

#### 3. Construct MDD

The food/ingredient-level data file will now include a list of items consumed by each child in quantities of at least 10 grams. Each of these items will have an associated WHO food group code. MDD can be constructed by counting the number of unique food groups consumed. The food group count can then range from 0–8. Then, calculate the percent of children who consumed five or more food groups (i.e. who have consumed 5, 6, 7 or 8 of the WHO food groups yesterday during the day or night).

As noted, in some data sets, the food/ingredient level files will contain information about breastfeeding episodes (that is, each time the child is breastfed, there will be a row in the food/ingredient-level file coded as breastmilk, even if quantity is not estimated). If so, the child should receive a "point" for breast milk based on analysis of the 24-hour recall data. This is the preferred approach for calculating MDD because the recall period for the breast milk group is the same as for other food groups.

However, in some data sets breast milk is not included with other foods and ingredients and breastfeeding is assessed by asking the respondent if the child is still breastfeed. If no data on consumption of breast milk in the previous day or night are available, the child can receive a point for the breast milk group if it is known that the child is not fully weaned.

In either case, the breast milk food group should be counted as a point regardless of quantity consumed.<sup>20</sup>

<sup>&</sup>lt;sup>17</sup> For cooked recipes, this calculation may require use of appropriate yield factors to estimate the quantity as consumed by the child. For recipes with milk powder, the quantity should be estimated as a fluid milk equivalent (i.e. as if reconstituted to fluid milk form).

<sup>&</sup>lt;sup>18</sup> An "item" is a food or ingredient eaten at a particular time – usually this will be one row in the food/ingredient level data file.

<sup>&</sup>lt;sup>19</sup> In some surveys, breast milk is present in the intake file but is not quantified. To standardize across all situations, for the purposes of this indicator any amount of breast milk is allowed to "count".

<sup>&</sup>lt;sup>20</sup> The model questionnaire provided in WHO 2010 includes the question: "Was (NAME) breastfed yesterday during the day or at night?





#### For more information, please contact:

Department of Nutrition for Health and Development World Health Organization

Avenue Appia 20, CH-1211 Geneva 27, Switzerland Email: nutrition@who.int www.who.int/nutrition

