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Impact of the Global Strategy for Infant and Young Child Feeding on Nutrition and Child
Survival Indicators as Illustrated by the World Breastfeeding Trends Initiative Tool

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Abstract

Background: Non-optimal infant and young child feeding (IYCF) practices are associated with malnutrition, infant mortality and under-five mortality, especially in Sub-Saharan Africa, where the risk of under-five mortality is 15 times higher than developed countries.

Objective: To determine implementation effects of the Global Strategy for Infant and Young Child Feeding before and after WBTi tool assessment using infant/child health data collected between 2000 and 2013 in Cameroon.

Methods: A descriptive analysis of Cameroon's policies, programmes and practices was conducted using the WBTi tool. Child survival and nutrition indicators before (2003-2008) and after (2009-2013) WBTi assessment were analyzed using data from the 2009 and 2015 State of the World's Children statistical tables

Results: Implementation of the GSIYCF improved after WBTi assessment in 2008. Cameroon's policies and programmes improved more than practices. Under-five and infant mortality rates over the period markedly improved. From 2009 to 2013 there was a 9.4% increase in complementary feeding rates, 14.3% increase in rates of infants still breastfeeding/breastfeeding at age two, and a 6% decrease in undernutrition in children between zero and 59 months.

Conclusion: The findings of this study reflect an increase in IYCF implementation effects on child survival and nutrition indicators after WBTi assessment compared with the WHO tool era. This suggests that use of the WBTi tool helped Cameroon focus on specific childhood preventive health interventions to improve child survival and nutrition indicators in Cameroon. The Ministry of Health should support continued use of the WBTi tool.

Keywords: Infant mortality, WBTi, under-five mortality, malnutrition, Cameroon

Impact of the Global Strategy for Infant and Young Child Feeding on Nutrition and Child Survival Indicators as Illustrated by the World Breastfeeding Trends Initiative Tool

Infant mortality and under-five mortality are huge public health issues worldwide. Although there has been a 49% decrease in under-five mortality rates between 1990 and 2013, 17,000 children under five years die every day. In Sub-Saharan Africa, the risk of under-five mortality is 15 times (92 deaths/1000 live births) the average for developed countries (six deaths/1000 live birth) (United Nations, World Health Organization [WHO], World Bank & United Nations Population Division, 2014). The same scenario was observed with neonatal mortality which was responsible for 44% of all under-five mortality within the same period. Sub-Saharan Africa accounted for one third of under-five mortality that occurred within the neonatal period (WHO, World Bank & United Nations Population Division, 2014). It is also a fact that developing countries are still a long way from reaching the targeted neonatal mortality rate of 10/1000 live births of the *Every Newborn Action Plan* (United Nations Children's Fund [UNICEF], 2009; United Nations, WHO, World Bank & United Nations Population Division, 2014). In addition, reports from the 2010 Global Burden of Disease Study revealed that a bulk of Sub-Saharan African countries have not been able to meet the United Nation's Millennium Development Goal #4 (reducing under-five mortality rate by two-thirds) (Institute for Health Metrics and Evaluation, 2013).

Malnutrition due to inadequate infant and young child feeding is also a crucial public health problem. Between 1990 and 2013, the prevalence of malnutrition (underweight and stunting) has been decreasing at a slower pace; with Sub-Saharan Africa experiencing the smallest relative decrease (UNICEF, 2015b). Sub-Saharan Africa lags behind all other regions with regard to achieving the targeted 50% reduction in undernutrition prevalence between 1990

and 2015 (Millennium Development Goal #1; eradicating extreme poverty and hunger) (UNICEF, 2015b). During this period, the global prevalence of underweight decreased from 25% to 15% compared to a 6% decrease (from 23% to 17%) in Africa (especially west and central Africa) (UNICEF, 2015b). According to the 2003 Global Strategy for Infant and Young Child Feeding (GSIYCF) report, malnutrition was responsible (directly or indirectly) for 60% of deaths of children under-five (WHO & UNICEF, 2003). Two-thirds of these deaths occurred during the first year and were associated to inappropriate feeding practices such as lack of exclusive breastfeeding and inappropriate initiation of complementary feeding (WHO & UNICEF, 2003). Poor nutrition within the first 1000 days of life and undernutrition in general predisposes children to greater risk of dying from infections. It also increases the frequency and severity of infections that may lead to delayed recovery, impaired cognitive development and decreased school performance (UNICEF, 2015b; WHO, 2003).

The important association between nutrition and child survival reiterates the need to develop and implement effective infant and young child feeding (IYCF) policies and practices. The GSIYCF is a framework jointly developed by the World Health Organization (WHO) and United Nation's Children Fund (UNICEF) to improve optimal infant and young child feeding (WHO & UNICEF, 2003). It involves initiation of breastfeeding within one hour of birth, promoting and supporting exclusive breastfeeding for the first six months of life followed by appropriate complementary foods for at least two years with continued breastfeeding (WHO & UNICEF, 2003). Implementation of the GSIYCF per country can be tracked by tools such as the World Breastfeeding Trend Initiative tool (WBTi) developed by the International Baby Food Action Network in Asia (IBFAN-Asia). The WBTi assesses national IYCF policies, programmes and practices, and identifies gaps in implementation of the GSIYCF (Arun et al., 2012). It was

first used to examine the GSIYCF in Cameroon in 2009, and then in 2012 (International Baby Food Action Network, 2012).

Given the huge burden of malnutrition and its association with under-five mortality/infant mortality rates in Cameroon and other Sub-Saharan African countries, the WBTi tool can be used to assist African health policy and decision-makers to identify areas of weakness in implementation of the GSIYCF.

Statement of Purpose

This research examines the impact of implementing the GSIYCF (tracked by the WBTi tool) on infant mortality/under-five mortality rates and nutrition indicators in children in Cameroon.

Literature Review

Defining the Global Strategy for Infant and Young Child Feeding

Addressing IYCF, infant mortality and under-five mortality requires a collaborative effort from various stakeholders. For example, UNICEF, WHO, World Bank, nations and non-governmental organizations are the major players involved in tracking and monitoring data on infant mortality, under-five mortality and IYCF policies and practices. With regards to IYCF, the GSIYCF was jointly developed by WHO and UNICEF in May 2000 and adopted by the World Health assembly (the decision making body of the WHO made up of delegations of WHO member states) two years later (WHO & UNICEF, 2003). It was developed to rekindle the attention of stakeholders on the impact of infant feeding policies and practices on nutritional status, growth and development, and child health. The GSIYCF was based on previous initiatives such as the Innocenti Declaration on the protection, promotion and support of breastfeeding, the International Code for Marketing Breast-milk Substitute and the Baby Friendly Hospital

Initiative (WHO & UNICEF, 2003). The GSIYCF is still relevant today because studies have shown that inappropriate feeding practices can lead to undernutrition (a form of malnutrition) which in turn, is responsible for nearly 50% of all under-five mortality (UNICEF, 2015b; WHO & UNICEF, 2003)

The GSIYCF is a framework of action with specific goals. It defines the roles of governments, international organizations and other stakeholders in improving IYCF practices (WHO, 2003; WHO, 2007). In general, the GSIYCF promotes initiation of breastfeeding within one hour of birth, promoting and supporting exclusive breastfeeding for the first six months of life followed by appropriate complementary foods for at least two years with continued breastfeeding. Specifically, it is aimed at raising awareness of the problems affecting IYCF, identifying approaches to their solutions, and developing an outline of interventions. Additionally, the GSIYCF provides a favorable environment to support informed choices about optimal breastfeeding. Lastly, it was meant to garner support from political and global agencies and other stakeholders for optimal feeding practices (WHO & UNICEF, 2003).

Evidence supporting the global strategy for infant and young child feeding.

There is a mass of scientific evidence supporting the GSIYCF. First, it is important to note that the global coverage of exclusive breastfeeding in the first six-months is sub-optimal at only 36% (WHO, 2011a). Among the top three childhood prevention interventions to reduce under-five mortality, promotion of exclusive breastfeeding in the first six months of life, and continued breastfeeding from six to eleven months was one of the top three interventions with level one effectiveness (level one effectiveness interventions included those with sufficient evidence of effect with a causal relationship between the intervention and reductions in cause-specific under-five mortality in developing countries) (Jones, Steketee, Black, Bhutta, & Morris,

2003). Jones, Steketee, Black, Bhutta, and Morris (2003) also showed that childhood preventative and treatment interventions could reduce under-five mortality rates by two-thirds in low-income countries if coverage was complete. In this study, the preventative interventions considered included: exclusive breastfeeding for six months, continued breastfeeding for six to eleven months, insecticide treated materials, complementary feeding, water and sanitation, zinc supplementation, vaccination and intermittent preventive treatment. Treatment interventions on the other hand included: administration of vitamin A, treatment of pneumonia, malaria, diarrhea and sepsis, and newborn resuscitation. Exclusive breastfeeding for six months was also shown to prevent diarrheal and respiratory tract infections (Lassi et al., 2014; Jones, Steketee, Black, Bhutta, & Morris, 2003). Further, breastfeeding for at least six months up to a year led to weight gain and protected infants from developmental deficit (Kramer & Kakuma, 2012). Lastly, education on complementary feeding and continued breastfeeding reduced rates of stunting, wasting and underweight in food insecure populations while complementary feeding with or without education improved wasting and underweight (Bryce, Coitinho, Darnton-Hill, Pelletier, & Pinstrup-Andersen, 2008).

Components of the global strategy for infant and young child feeding.

In addition to the specific goals and documents on which the GSIYCF was built upon, the GSIYCF also specifies the stakeholders, the context in which the strategy can be implemented, and targets. The GSIYCF can be implemented during disasters, in work places, for malnourished children and mothers, premature and low birth weight babies, and HIV-positive breastfeeding mothers. Governments, non-governmental organizations, health professionals are important stakeholders of the global strategy framework. Mothers, families, commercial entities and the community make up the target group (WHO & UNICEF, 2003).

Challenges of the global strategy for infant and young child feeding.

There are several challenges faced by the GSIYCF. These include: addressing malnutrition, which is responsible for about 60% of under-five mortality, and promoting the rights of children and women to proper nutrition. Further, proponents must establish and implement policies to support maternity leave, policies to support exclusive breastfeeding by HIV-infected women, and addressing optimal feeding practices during periods of food insecurity and war (WHO & UNICEF, 2003).

How to track the global strategy for infant and young child feeding.

Several tools have been developed to track infant and young child feeding. These include: WBTi tool and the World Health Organization (WHO) tool for assessing national policies, practices and programmes on infant and young child feeding (WHO, 2003; Lutter & Morrow, 2013; Arun et al., 2012). The WHO tool was published in 2003 by the WHO to help nutrition programme managers/staffs and other users assess the strength and weaknesses of policies and programmes. The aim was to protect, promote and support optimal feeding practices. It was developed to help determine where improvements were needed in order to meet the aims and objectives of the GSIYCF (WHO, 2003). The 2003 WHO tool measures national practices, policies and programmes on infant and young child feeding. Specifically, it measures five indicators of practices, six indicators of national policies and twelve indicators of national IYCF programme (WHO, 2003). The complete list of indicators for national IYCF policies and programmes can be found in “Infant and young child feeding: A tool for assessing national practices, policies and programmes” freely downloadable on the WHO (2003) website. The WHO tool scores IYCF practices quantitatively (in percentages) while rating is done qualitatively (with poor being the worse performance and very good indicating practices that are

optimal). On the other hand, policies and programmes on the tool scores qualitatively (with a full score of two if the criterion for a particular indicator is fully met and zero if the criterion was not met). One of the strengths of the WHO tool is that it scores IYCF practices indicators quantitatively (numerically) based on past achievements of other countries on various indicators. Further, the WHO tool does use additional data sources such as the demographic and health survey (DHS), and multiple indicator cluster survey (MICS) in addition to the national data (WHO, 2003). Another important advantage of the WHO tool is that rating of the level of achievement is fairly simple (based on the score for specific indicators, rating can be poor, fair, good and very good; with very good indicating practices or policies that are optimal) (WHO, 2003). Despite the advantages of the WHO tool, it is important to note that the 2003 WHO tool is not web-based and was not designed to generate country report cards of IYCF practices, policies and programmes (Arun et al., 2012).

The World Breastfeeding Trends Initiative (WBTi) tool is an adaptation of the WHO tool to track and monitor progress of implementation of the GSIYCF. It was developed by IBFAN-Asia to track, assess and monitor national practices, policies and programmes on Infant and Young Child Feeding (IYCF) as well as mobilizing national actions to optimize IYCF practices (Arun et al, 2012; Lutter & Morrow, 2013; WHO, 2012). This tool was piloted in eight Asian countries in 2005 and updated in 2008. It was later on introduced in 81 additional countries. As of 2011, 40 countries have completed their assessment (Arun et al., 2012). The WBTi measures a set of 15 indicators of IYCF. The first 10 indicators focus on policies and programmes and the remaining five address feeding practices (Lutter & Morrow, 2013). These indicators are shown in Table 1.

Table 1.

*World Breastfeeding Trend Initiative Tool Indicators**

IYCF Policies and Programmes (Indicators 1 to 10)

1. National policy, programme and coordination
2. Baby-Friendly Hospital Initiative (ten steps to successful breastfeeding)
3. Implementation of the International Code of Marketing Breast-milk Substitutes
4. Maternity protection
5. Health and nutrition care systems
6. Mother support and community outreach
7. Information support
8. Infant feeding and HIV
9. Infant feeding during emergencies
10. Monitoring and evaluation

IYCF Practices (Indicators 11 through 15)

11. Percentage of infants breastfed within one hour
 12. Percentage of infants less than six months of age exclusively breastfed in the last 24 hours
 13. Median duration of Breastfeeding in months
 14. Percentage of breastfed infants less than six months receiving other foods or drink from bottles (Bottle feeding rates)
 15. Percentage of breastfed infants receiving complementary foods at six to nine months
-

*Listed verbatim from <http://worldbreastfeedingtrends.org/wbti-tool/>

For each indicator, there is a list of key criteria and a subset of questions to consider.

These sub-questions are used in assessing implementation progress and assigning scores for each indicator; with scores ranging between 0 and 10 points. The total score for the 15 indicators lies between 0 and 150 points (Arun et al., 2012; Lutter & Morrow, 2013).

The WBTi has several advantages over the WHO tool for monitoring and assessing policies and practices of infant and young child feeding (Arun et al., 2012; International Baby Food Action Network, 2010). First, the WBTi tool is easy to use and simplifies assessment through color coding. This fact was actually confirmed by feedback from countries where the WHO tool had previously been tested. Second, the WBTi questionnaire can be adapted to include new concerns on the implementation of each area of action in the GSIYCF. For example,

the 2008 and 2009 updated version of the WBTi included indicators such as maternity protection and mother support. Third, IBFAN has made the WBTi tool a web-based software data bank publicly available to facilitate analysis. Lastly, the WBTi tool can generate reports and report cards on the status of IYCF practices and policies of countries in low income and middle income countries.

Case study: Why assessing implementation of the global strategy for infant and young child feeding in Cameroon?

Cameroon is a lower middle income Sub-Saharan African country found in central Africa. Cameroon has a population of over 22 million people and shares borders with Nigeria, Chad, Central African Republic, Congo, Gabon and Equatorial Guinea (Institut National de la Statistique, Ministère de l'Économie de la Planification et de l'Aménagement du Territoire, Ministère de la Santé Publique & ICF International Calverton [INS-MEPAT-MSP & ICFIC] 2011; World Bank, 2013). The gross national income (GNI) per capita was \$1,290 in 2013 (World Bank, 2013). Although Cameroon has a democratic government, the current president has been in office for 32 years (Azang-Njaah, 2010). Cameroon has not experienced a major unrest after the 1992-1994 "Operation Dead Cities" that failed to oust the current president (Business Africa, 2015).

Cameroon heavily depends on its agricultural sector for economic development (INS-MEPAT-MSP & ICFIC, 2011; World Bank, 2013). Of the ten regions in Cameroon, the extreme north, north and Adamaoua regions are notorious for food insecurity and high malnutrition rates due to extreme weather conditions (flooding and severe famine) (INS-MEPAT-MSP & ICFIC, 2011).

Reports of the 2011 DHS conducted in Cameroon showed a great need to improve child nutrition and child survival. In 2011, the prevalence of exclusive breastfeeding was sub-optimal at 20%. That same year, 31% of children aged six to nine months did not receive complementary feeding. Between 2004 and 2011, trends of undernutrition and wasting did not change (INS-MEPAT-MSP & ICFIC, 2011). The prevalence of underweight, stunting and wasting among children aged between zero and 59 months was 33%, 15% and 6% respectively (INS-MEPAT-MSP & ICFIC, 2011). The extreme north, north and Adamaoua regions reported very high prevalence for severe chronic malnutrition at 27%, 18% and 18% respectively (INS-MEPAT-MSP & ICFIC, 2011).

Additionally, the prevalence of under-five mortality between 2000 and 2011 was 62 per 1000 live births (INS-MEPAT-MSP & ICFIC, 2011). This is above the global prevalence of 46/1000 live births recorded in 2015 (UNICEF, 2015a).

Given the great potential of the WBTi tool and the poor child survival and nutrition indicators in Cameroon, the WBTi can be used to assist health policy-makers to track and monitor implementation of the GSIYCF in Cameroon. In 2009, the first WBTi tool assessment was conducted in Cameroon. This was followed by a second assessment in 2012 (International Baby Food Action Network, 2012). The results of the assessments can be used by health policy and decision makers to promote, protect and support optimal IYCF practices in Cameroon. This, in turn, may help improve nutrition and child survival indicators; given the link between malnutrition and under-five mortality rates (UNICEF, 2015b; WHO & UNICEF, 2003).

Research Methods

Research Questions

The following research questions were addressed in this study:

- Did implementation of the Global Strategy for Infant and Young Child Feeding (GSIYCF) tracked by WBTi tool in Cameroon affect under-five mortality and infant mortality rates?
- What was the trend of nutrition indicators and under-five mortality/infant mortality rates in Cameroon between 2000 and 2013?

Research Hypotheses

These were the hypotheses for the research questions:

- Implementing the GSIYCF positively influence under five mortality rates/infant mortality rates.
- The GSIYCF tracked by the WBTi tool was expected to reflect improved child survival and nutrition indicators from 2000 to 2013.

Analysis

In order to address the research questions a descriptive analysis was done. First, using the WBTi tool, a secondary descriptive analysis of the status of infant and young child feeding practices, policies and programmes between 2010 and 2013 was done. Second, percent change was also used to describe the state of nutrition indicators in Cameroon before (2000-2007) and after WBTi tool assessment (2009-2013). Lastly, trends of infant mortality and under-five mortality were analyzed using descriptive statistics and presented as line graphs.

Data sources.

The web-based WBTi tool was the main data source for IYCF practices, policies and programmes. The WBTi tool, in turn, draws data from the two (2004 and 2011) completed nationally representative DHS of Cameroon, Ministry of Public Health, HIV/AIDS national committee, Multiple Indicators Cluster Survey (MICS), UNICEF, Ministry of Labor and the

International Labor Organization (International Baby Food Action Network, 2012). Also, information on IYCF practices was gathered from nationally representative data (Arun et al., 2012; International Baby Food Action Network, 2012).

For nutrition and child survival (infant and under-five mortality) indicators, the main data source was UNICEF's State of the World Children's statistical tables for 2009 and 2015 respectively (UNICEF, 2009; UNICEF, 2015a). Estimates for nutrition and child survival indicators were drawn from nationally representative household surveys such as the MICS, DHS and United Nations Inter-agency Group for Child Mortality Estimation (UNICEF, WHO, World Bank & United Nations Population Division, 2014).

Variables.

WBTi indicators. As mentioned earlier, 15 WBTi indicators (ten on IYCF policies and programmes and five on practices) were considered for the current study. For each indicator on policies and programmes, a list of key criteria and a sub-set of questions was used for scoring (Lutter & Murrow, 2013). A complete list of the ten indicators and sub-questions is found in Table 1 of "The status of infant young child feeding in 40 countries" by Arun and colleagues (2012) and Appendix 2 of this manuscript. The sub-questions go into finer details to identify the level of achievements and gaps in particular areas of IYCF policies and programmes in Cameroon. Each sub-question was scored with possible scores ranging from zero to three, where zero was the minimum score (key criteria was not met) and three, the maximum (key criteria was fully met). Each indicator had a maximum score of ten (International Baby Food Action Network, 2010; Arun et al., 2012). The maximum possible score for the ten indicators dealing with policies and programmes was 100 (International Baby Food Action Network, 2010; Arun et al., 2012; Lutter & Murrow, 2013). After scoring, the level of achievement was color-rated and

graded. Color-rating and grading provided details about the level of progress or performance made in a particular area of IYCF policies and programmes. Table 2 and 3 below shows the scoring, color-rating, and grading system used for indicators on policies and programmes (International Baby Food Action Network, 2010; International Baby Food Action Network, 2012; Arun et al., 2012).

Table 2.

*WBTi Guidelines for Scoring, Color-rating and Grading of IYCF Policies and Programmes**Indicators*

Score	Color-rating	Grading/
0-3	Red	Worst Performance
4-6	Yellow	Worse Performance
7-9	Blue	Average Performance
9-10	Green	Good Performance

Table 3.

Total Score, Color-rating and Grading of IYCF Policies and Programmes using the WBTi Tool

Total Score	Color-rating	Grading
0-30	Red	Worst Performance
31-60	Yellow	Worse Performance
61-90	Blue	Average Performance
91-100	Green	Good Performance

For the five indicators dealing with IYCF practices (indicators 11 to 15) (Table 1) in Cameroon, the WBTi tool made use of national secondary numerical data from a random household survey (International Baby Food Action Network, 2012; International Baby Food

Action Network, 2010; Arun et al., 2012). The maximum score for each indicator was 10, giving a total possible score of 50. The level of achievement for each indicator dealing with IYCF was rated using guidelines of the 2003 WHO tool. As previously described color-rating using the WHO tool, was based on level of a country's achievement across indicators (International Baby Food Action Network, 2010). Additional information about rating of IYCF practices by the WHO tool can be found in "Infant and young child feeding: A tool for assessing national practices, policies and programmes," freely downloadable on the WHO (2003) website. Table 4 illustrates the scoring, rating and grading of IYCF practices by the WBTi tool (International Baby Food Action Network, 2010; International Baby Food Action Network, 2012).

Table 4.

Total Score, Color-rating and Grading of IYCF Practices using the WBTi Tool

Score	Color-rating	Grading
0-15	Red	Worst Performance
16-30	Yellow	Worse Performance
31-45	Blue	Average
46-50	Green	Good Performance

Nutrition indicators. The nutrition indicators considered include: low-birth weight, early initiation of breastfeeding, exclusive breastfeeding in infants less than six months, complementary feeding in infants between six to eight months, breastfeeding at age two, moderate/severe underweight, moderate/severe stunting, moderate/severe wasting and overweight. Estimates (percentages) of these indicators were drawn from UNICEF's State of the

World’s Children (SWOC) statistical tables for 2009 and 2015 respectively (UNICEF, 2009; UNICEF, 2015a). These indicators are defined in Appendix 2.

Child survival indicators. Infant mortality and under-five mortality were the main child survival indicators considered in this study. Estimates were drawn from UNICEF’s SOWC statistical tables for 2009 and 2015 (UNICEF, 2009; UNICEF, 2015a). They are defined in Appendix 1.

Results

Infant and Young Child Feeding Practices, Policies and Programmes Score

Figure 1 shows an overall increase (improvement) in IYCF practices, policies and programmes score between 2010 and 2013. This increase indicates that the level of performance on IYCF practices, policies and programmes changed from yellow (worse performance) to blue (average performance).

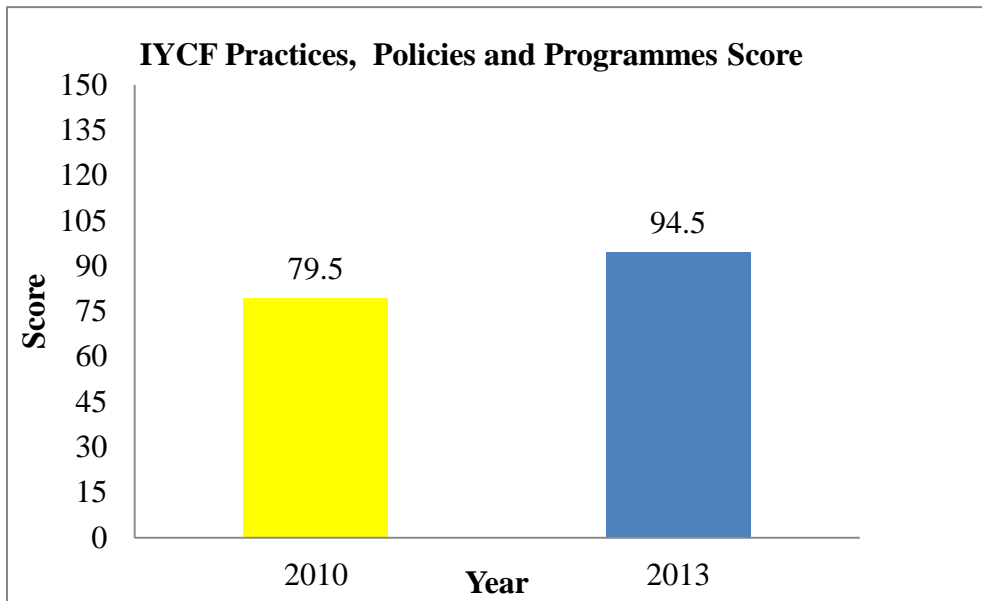


Figure 1. Infant and Young Child Feeding (IYCF) practice, policies and programmes score for Cameroon between 2010 and 2013.

Note: Maximum possible score was 150.

Infant and Young Child Feeding Policies and Programmes Score

Figure 2 shows that there was an improvement in IYCF policies and programmes score between 2010 and 2013. This indicates that between 2010 and 2013, the level of performance on IYCF policies and programmes changed from yellow (worse performance) to blue (average performance).

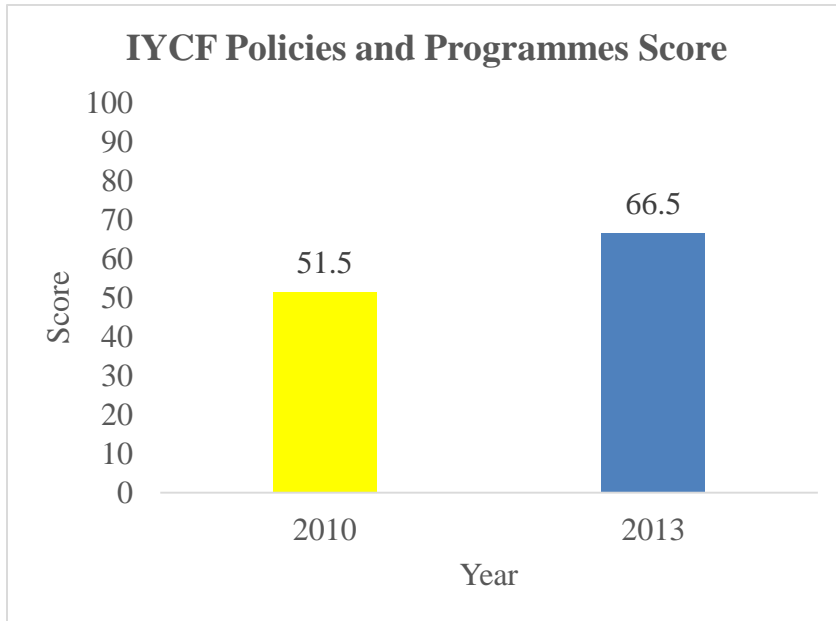


Figure 2. Infant and Young Child Feeding (IYCF) policies and programmes score for Cameroon between 2010 and 2013.

Notes: The maximum possible total score was 100.

Profile of Infant and Young Child Feeding Policies and Programmes

Table 5 shows an improvement in policies and programmes related to infant feeding during emergencies, health and nutrition care system, infant feeding and HIV, monitoring and evaluation and maternity protection.

Table 5. *Percent Change of Infant and Young Child Feeding Policies and Programmes Score over Three years as Illustrated by the WBTi Tool*

Indicators	2010	2013	Percent Change	Progress
1. National Policy and Programme Coordination	6	6	0	No
2. Baby-Friendly Hospital Initiatives	0	0	0	No
3. Implementation of the International Code for Marketing Breast-milk substitute	8	8	0	No
4. Maternity Protection	6.5	7.0	7.7% increase	Yes
5. Health and Nutrition system care	5	9.5	90% increase	Yes
6. Community Outreach	7	6	14.2% decrease	Worsening
7. Information Support	9	9	0	No
8. Infant Feeding and HIV	6	9	50% increase	Yes
9. Infant Feeding during Emergencies	0	6	Over a 100% increase	Yes
10. Monitoring and Evaluation	4	6	50%	Yes

Note: The maximum possible score for each indicator was 10.

Infant and Young Child Feeding Practices Score in Cameroon between 2010 and 2013

Figure 3 shows that there was no change (improvement) in infant and young child feeding practices in Cameroon between 2010 and 2013. A score of 28 as shown in this figure is color-rated yellow by the WBTi tool, and indicates that the level of performance was worse and did not change.

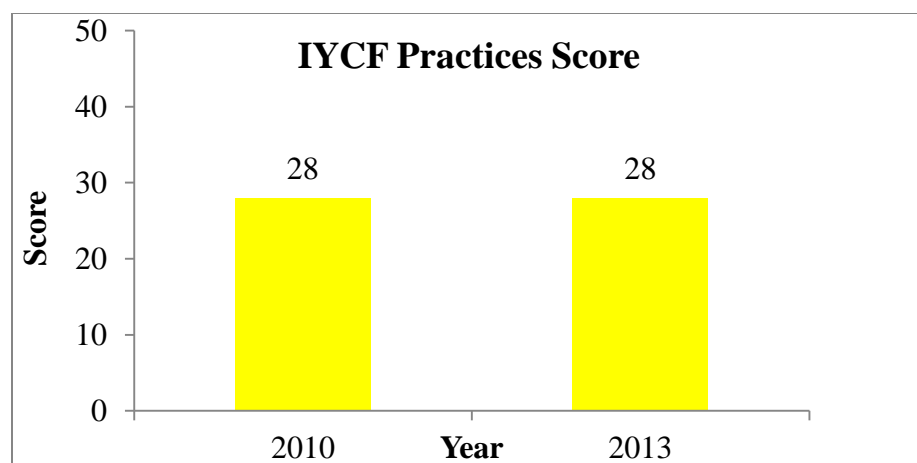


Figure 3. Infant and Young Child Feeding (IYCF) practices score for Cameroon.

Note: The maximum possible score was 50.

Profile of IYCF Practices for Cameroon between 2010 and 2013

Table 6 shows that there has not been progress in IYCF practices in Cameroon between 2010 and 2013.

Table 6.

Percent Change of Infant and Young Child Feeding Practices Score over a Three-year Period as

Illustrated by the WBTi Tool

Indicators	2010 Score	2013 Score	Percent Change	Progress
11. Early initiation of breastfeeding rates	10	10	0	No
12. Exclusive* breastfeeding rates for the first six months	6	6	0	No
13. Median duration of breastfeeding rates	3	3	0	No
14. Bottle feeding rates	3	3	0	No
15. Complementary feeding rates	6	6	0	No

Note: The maximum possible score for each indicator was 10.

*The WBTi tool measures level of achievement of IYCF practices indicators in rates and absolute scores. Similar to the WHO tool, the WBTi tool converts the level of achievement of

each indicator from rates to scores. Although this table shows no change in rates of exclusive breastfeeding in terms of absolute scores, the rate of exclusive breastfeeding actually declined by 17% (from 37% to 20%) between 2010 and 2013.

Rates for other IYCF practices between 2010 and 2013 include: Early initiation of breastfeeding (96.5 to 96.5%), median duration of breastfeeding (17.5 to 17.5%), bottle-feeding (75% to 75%) and complementary feeding (79% to 79%).

Trends of Nutrition Indicators between 2010 and 2013 in Cameroon

Table 7 shows an improvement in complementary feeding rates, breastfeeding at age two and worsening of exclusive breastfeeding rates and stunting in Cameroon.

Table 7. *Percentage Change in Nutrition Indicators Pre- and Post-WBTi Assessment*

Nutrition Indicators	Pre-WBTi Assessment (2000-2007)	Post-WBTi Assessment (2009-2013)	% Change
Low birth weight infants (%)	11	11	0 (no)
Early initiation of breastfeeding (%)	*N/A	40	-----
Exclusively breast fed Infants <6 months	21	20	5 (Decrease)
Children breastfed with complementary foods in infants 6-8 months (%)	64	70	9.4 (Increase)
Still breastfeeding /Breastfeeding at age 2 (%)	21	24	14.3 (Increase)
Children 0-59 with Moderate/Severe underweight (%)	16	15	6.3 (Decrease)
Moderate/Severe stunting (%)	30	33	10 (Increase)
Moderate and severe wasting (%)	6	6	0 (No)
Moderate and severe overweight (%)	*NA	7	-----

Note:* No baseline data collected during this period. Indicator was added after 2008.

Data source: UNICEF's State of the World's Children 2009 and 2015 statistical tables.

Trends of Child Survival Indicators Pre- and Post-World Breastfeeding Trend Initiative

Tool Assessment

Figure 6 shows that there was a decline in both under-five mortality rates (UFMR) and infant mortality (IMR) rates before (2003) and after (2009-2014) WBTi assessment. The decline was greatest post-WBTi assessment.

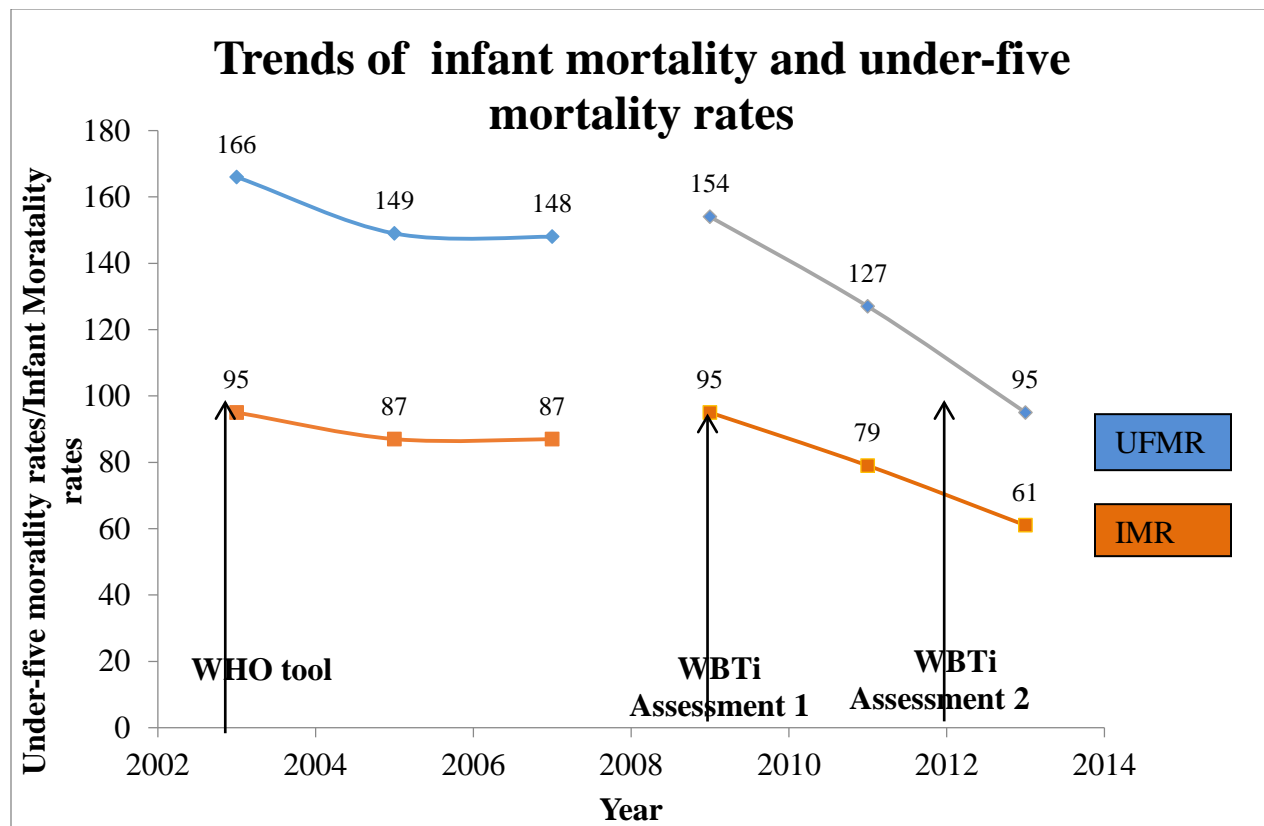


Figure 6. Under-five mortality rates and infant mortality rates pre- and post WBTi assessment.

Note: UMR: Under-five mortality rates, IMR: Infant mortality rates, WBTi: World Breastfeeding Trend Initiative tool, WHO tool: World Health Organization tool.

Discussion

The focus of this study was to determine the impact of the Global Strategy for Infant and Young Child feeding (GSIYCF) tracked by the World Breastfeeding Trend Initiative tool (WBTi) on child survival and nutrition indicators in Cameroon between 2000 and 2013.

Specifically, this study examined the impact of IYCF practices, policies and programmes on child survival and nutrition to illustrate implementation during times before and after WBTi assessment.

The main findings of this study show an overall improvement in Cameroon's implementation of the GSIYCF since 2000. Between 2010 and 2013, Cameroon has shown improvement (from worse to average) in the level of performance of policies and programmes of IYCF, no change in IYCF practices and a marked decline in under-five mortality rates/ infant mortality rates. The findings of this study indicate that WBTi assessment (2009–2012) is associated with a faster improvement in child survival indicators compared with the years in which the WHO tool was used for assessment (2003–2007).

Child Survival Indicators

Tracking IYCF practices, policies and programmes and making recommendations to close the gaps has the potential to improve child survival indicators. This research showed a marked decline in under-five and infant mortality rates post-WBTi assessment. These findings indicate that implementation of GSIYCF among other childhood interventions is critical for child survival. Implementation of the GSIYCF is one of the many childhood preventive health and nutritional interventions to improve child survival (UNICEF, 2011; Jones, Steketee, Black, Bhutta, & Morris, 2003). The 2003 Lancet child survival series showed that among the top 15 preventative child survival interventions to prevent under-five mortality, IYCF practices such as exclusive breastfeeding and breastfeeding up to age two, insecticide bed treated nets and complementary feeding starting at six months were ranked number one, two and three respectively in terms of effectiveness (Jones, Steketee, Black, Bhutta, & Morris, 2003). Jones, Steketee, Black, Bhutta, & Morris (2003) exclusive breastfeeding, breastfeeding up to age two

and complementary feeding had the potential of preventing one fifth of under-five mortality in developing countries. Similarly, the 2008 Lancet Nutrition series also estimated that optimal IYCF practices could potentially prevent 1.4 million deaths every year among children under five years (Black et al., 2008). The marked reduction in under-five mortality and infant mortality rates post-WBTi assessment with non-optimal IYCF (poor IYCF practices scores) found in the current study may be due to implementation of other childhood health interventions in addition to IYCF practices. This was demonstrated by the 2010 Global Burden of Disease study which reported that Cameroon unlike other Western Sub-Saharan African Countries such as Ivory Coast, Togo and Liberia, experienced higher rates of decline in under-five mortality rates between 2000 to 2010 compared to 1990 to 2000 (Institute for Health Metrics and Evaluation, 2013). The rapid decline in under-five mortality rates was attributable to increased availability of insecticide-treated bed nets, artemisinin-based combination therapy¹ and scale up of antiretroviral therapy (Institute for Health Metrics and Evaluation, 2013). This indicates that improving IYCF policies, programmes and practices in Cameroon could potentially lead to a more rapid decline in under-five-mortality and infant mortality rates to meet the Millennium Development Goal #4 (reducing under-five mortality by two-thirds by 2015). In addition, this study suggests that the marked decline in under-five and infant mortality rates experienced after the WBTi assessments may possibly be due to the ability of the WBTi to identify areas for improvement in infant/child nutrition with subsequent movement towards specific childhood health targets.

Infant and Young Child Feeding Policies and Programmes

Several reasons can be proposed for the improvements made by Cameroon on IYCF policies and programmes between 2010 and 2013. First, improvements in policies/programmes

¹ One of the most efficacious anti-malarial drugs.

related to HIV and infant feeding may be explained by the fact that Cameroon has a comprehensive policy on IYCF that includes infant feeding and HIV (International Baby Food Action Network, 2012). In addition, Cameroon has a system in place that trains community health workers on infant feeding and HIV, and the risk involved with other options of feeding (International Baby Food Action Network, 2012). Second, improvement in policies and programmes related to health and nutrition care systems may be related to Cameroon's guidelines for mother-friendly child birth procedures available to health facilities/personnel, and integration of IYCF curricular into healthcare provider's school programs (International Baby Food Action Network, 2012). Lastly, Cameroon has an emergency preparedness plan and comprehensive policy on IYCF to promote exclusive breastfeeding and minimize risk of formula feeding during emergencies (International Baby Food Action Network, 2012). The implications emerging from the analysis of IYCF policies and programmes in Cameroon between 2010 and 2013 include: the need to appoint a national coordinator of IYCF at the Ministry of Health, increasing support especially to women working in informal and agricultural sectors, and improving guidelines for infant feeding in emergencies. These issues are consistent with reports and other studies from Africa, Latin America and India and reports presented during the 2012 IBFAN workshop on IYCF practices, policies and programmes in Cameroon (Gupta, 2008; International Baby Food Action Network, 2012).

Infant and Young Child Feeding Practices

While this study documented an improvement in policies and programmes on IYCF in Cameroon, there was no change in the IYCF practices score. Cameroon seems to be doing better in IYCF policies and programmes than in actual practices. There are many possible explanations for the lack of improvement of IYCF practices observed in the current study. These include lack

of enactment of the International Code of Marketing of Breast-milk Substitutes, high formula feeding rates, lack of a national IYCF coordinator, poor maternity protection policies and no efforts made in initiating Baby Friendly Hospital Initiatives (BFHI) in health facilities (International Baby Food Action Network, 2012; Arun et al., 2012). Other possible factors to examine include: absence of a comprehensive national communication and social marketing strategy, and lack of national capacity building to equip training institutions to facilitate IYCF practices and IYCF practices not being a priority on the developmental and political agenda (WHO, 2011b).

Although the WBTi score for IYCF practices did not change overall, the current study documented a 17% decrease in exclusive breastfeeding rates and an unchanged high bottle feeding (formula feeding rates) rates of 75%. In addition appropriate complementary feeding rates and rates of initiation of breastfeeding within one hour were higher than the average reported by 36 countries in 2011 (Arun et al., 2012). In fact, Arun and colleagues (2012) showed that the average rate of early initiation of breastfeeding and complementary feeding reported by 36 countries were just above 50% and 65.2% respectively. The WHO's "The African Health Monitor" on IYCF practices in 2011 reported similar sub-optimal rates of exclusive breastfeeding for six months in the Sub-Saharan African regions (31% versus a global average of 37%) (WHO, 2011b). This report showed that while some countries were experiencing increase in exclusive breastfeeding rate after implementation of IYCF strategies, countries such as Nigeria, Zambia, Uganda and Madagascar experienced decreased rates; reasons for which were still under investigation (WHO, 2011b; Lutter & Morrow, 2013). The decline in exclusive breastfeeding rates documented in the current study can possibly be explained by lack of a national coordinator of IYCF practices at the Ministry of health, lack of sanctions following

violations of the International Code of Marketing Breast-Milk Substitutes, high bottle feeding rates (formula feeding rates), poor national maternity protection policies, and early introduction of complementary foods such as herbal tea, water and porridge (International Baby Food Action Network, 2012; WHO, 2011b). Although Lutter and Morrow (2013) showed that socio-demographic factors such as maternal level of education, paid maternal employment and urban residence were not associated with changes in exclusive breastfeeding rates, the impact of maternal education, rural vs urban residence, type of birth attendant, household income and home deliveries on exclusive breastfeeding still need to be examined in Cameroon. These socio-demographic factors were shown to have an effect on early initiation of breastfeeding and complementary feeding in Cameroon (INS-MEPAT-MSP & ICFIC, 2011).

Nutrition Indicators

Apart from rates of exclusive breastfeeding and moderate/severe stunting, there was an improvement in majority of the nutrition indicators (rates of complementary feeding, breastfeeding at age two and moderate/severe underweight) after the WBTi assessment. These findings suggest that gaps in implementation of the GSIYCF identified by the first and second WBTi assessment helped policy makers come up with policies and programme to focus on specific childhood areas for health interventions to promote optimal IYCF practices in Cameroon. Several studies have shown an association between optimal feeding practices and nutrition indicators. For example, the 2008 Lancet child nutrition series showed that complementary feeding with or without education improved wasting and underweight in food insecure populations (Bryce et al., 2008). Also, in a systematic review that looked at all child health interventions having an alleged impact in reducing child morbidity/mortality, counselling on exclusive breastfeeding and promotion and support of continued breastfeeding were

considered effective to prevent malnutrition (Lassi et al., 2014). Although there was improvement in majority of the nutrition indicators, the 10% increase in moderate/severe stunting observed post-WBTi assessment is an indication that IYCF practices in Cameroon needs to be improved. This is consistent with UNICEF's 2011 report on IYCF. According to this report, stunting was a strong indicator of the quality of IYCF practices (UNICEF, 2011).

Limitations and Strengths

This study had limitations. First, data used for this study was specific to one country, Cameroon. A comparison study involving two or more countries with similar geo-political background may have strengthened the implications of the findings. Second, only two WBTi data points (2009 and 2012) were available for the WBTi tool. Given the difficulty in changing policies and practices over a short period, a longer observation period may have provided more thorough evaluation of the performance of the WBTi in tracking, assessing and monitoring IYCF practices, policies and programmes in Cameroon. In addition, there is also a possibility that a longer observation period was needed for IYCF practices and policies and programmes to have a significant impact on child survival and nutrition indicators. Lastly, this study used aggregate data (WBTi and UNICEF's SOWC statistical tables) and was unable to describe the status of IYCF practices, policies and programmes by region, residential area, maternal level of education and household incomes, factors that may as well influence child survival and nutrition indicators.

Despite these limitations, this study revealed important insights. Although this study had an observational study design, it is an alternative to a randomized controlled trial that is difficult to conduct at a population level (Lutter & Morrow, 2013; Victoria, Habicht, & Bryce, 2004). In situations where randomized controlled trials are non-ideal, the current study may be the only study design to provide evidence of the implementation effects of IYCF policies and

programmes and their association with outcome indicators (nutrition and child survival indicators) (Victoria et al., 2004). Second, this study evaluated nutrition and child survival indicators before and after WBTi assessments. This compensates for the lack of comparison between countries that conducted the assessment versus those that did not. Further, to the best of our knowledge, this study appears to be the first study that assessed the implementation effects of IYCF policies and programmes tracked by the WBTi tool on child survival and nutrition indicators.

Conclusion and Recommendation

In conclusion, this study demonstrates that the WBTi tool evaluates improvement in child survival and nutrition indicators. It also shows that sustained implementation of the GSIYCF as illustrated by the WBTi tool gives a clear indication of areas for improvement and shows movement towards specific goals. The Ministry of Health is encouraged to support periodic use of the WBTi to facilitate sustainable implementation of optimal IYCF practices.

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Appendix 1- Definition of terms

¹**Early Initiation of breastfeeding:** Percentage of infants who are put to the breast within one hour of birth.

¹**Exclusive breastfeeding <6 months:** Percentage of children aged 0 to 5 months who are fed exclusively with breast milk in the 24 hours prior to survey.

Introduction of solid, semi-solid or soft foods (6 to 8months): Percentage of children aged 6-8months who received solid, semi-solid or soft foods in the 24 hours prior to the survey.

¹**Breastfeeding at age 2:** Percentage of children aged 20 to 23 months who received breast milk in the 24 hours prior to the survey.

¹**Underweight:** Moderate and severe: Percentage of children aged 0 to 59 months who are below minus two standard deviations from median weight-for-age of the WHO child growth standards.

¹**Stunting:** Moderate and severe: percentage of children aged 0 to 59 months who are below two standard deviations from median height-for-age of the WHO child growth standards.

¹**Wasting:** Moderate and severe: percentage of children aged 0-59 months who are below minus two standard deviations from the median weight-for-height of the WHO child growth standards.

¹**Overweight:** moderate and severe: percentage of children aged 0 to 59 months who are above two standard deviations from median weight-for-height of the WHO child growth standards.

²**Under-five mortality rates:** probability of dying between birth and exactly five years of age expressed per 1000 live births.

²**Infant mortality rate:** Probability of dying between birth and exactly one year of age, expressed per 1000 live births.

¹ Taken verbatim from United Nation's Children Fund 2014 State of the World's Children report.

² Taken verbatim from the 2014 "Levels and Trends in Child Mortality Estimates" developed by United Nation's Inter-agency for Child Mortality Estimation.

Appendix 2

Sub-questions of each of the 10 indicators of Infant and Young Child Feeding Policies and Programmes.

Listed verbatim from Table 1 of Arun et al., 2012.

Indicators	Sub-questions
1. National Policy, Programme and Coordination	<ol style="list-style-type: none"> 1. A national infant and young child feeding policy has been officially adopted/ approved by the government. 2. The policy promotes exclusive breastfeeding for the first six months, complementary feeding to be started after six months and continued breastfeeding for up to two years. 3. A national plan of action has been developed with the policy. 4. The plan is adequately funded 5. There is a national breastfeeding (infant and young child feeding) committee. 6. The national breastfeeding committee meets and reviews on a regular basis. 7. The national breastfeeding (infant and young child feeding) committee links effectively with all other sectors like health, nutrition and information. 8. Breastfeeding committee is headed by a coordinator with clear terms of reference.
2. Baby Friendly Hospital Initiative (10 steps to successful breastfeeding)	<ol style="list-style-type: none"> 1. Quantitative: percentage of Baby Friendly Hospital Initiatives (BFHI) 2. Qualitative to find skilled training inputs and sustainability of BFHI; this sub-sets looks at the percentage of BFHI-designated hospitals that have been certified after a minimum recommended training of 18 hours for all its staffs working in a maternity services. 3. BFHI programme relies on training of health workers. 4. A standard monitoring system is in place. 5. An assessment system relies on interview 6. Reassessment system have been incorporated in the national plan 7. There is a time -bound programme to increase the number of BFHI institutions in the country.
3. Implementation of the International Code for Marketing of Breast-milk Substitute	<ol style="list-style-type: none"> 1.No action taken 2.The best approach is been studied 3. National breastfeeding policy incorporating the code in full or in part but not legally binding and therefore unenforceable. 4. National measures (to take into account measures other than the law) awaiting final approval. 5. Administrative directive/circular implementing the code in full or in part in health facilities with administrative. 6. Some articles of the code as a voluntary measure. 7. Code as a voluntary measure 8. Some articles of the code as law 9. All articles of the code are law, 10. All articles of the code are law, monitored and enforced.

4. Maternity Protection

1. Women covered by the national legislation are allowed the following weeks of paid maternity leave:

- Any leave < 14 weeks= 0.5 (score)
- 14-17 weeks=1 (score)
- 18-25 weeks=1.5 (score)
- ≥ 26 weeks=2 (score)

2. Women covered by national legislation are allowed at least one breastfeeding break or reduction of work hours daily.

- Unpaid break= 0.5 (score)
- Paid break=1.5 (score)

3. Legislation obliges private sector employers of women in the country to give at least 14 weeks paid maternity leave and paid nursing breaks.

4. There is provision in national legislation that provides for site work site accommodation

5. Women in the informal sector/unorganized and agriculture sector are:

accorded some protective measures

- accorded the same protection as women working in the formal sector
- accorded the same protection as women working in formal sector.

6. a. Information about maternity protection laws, regulations or policies is made available to workers.

b. There is a system for monitoring compliance and a way for workers to complain if their entitlement is not provided.

7. Paternity leave is granted in the public sector for at least 3 days.

8. Paternity leave is granted in the private sector for at least 3 days.

9. There is legislation providing health protection for pregnant and breastfeeding workers: they are informed about hazardous condition.

10. There is legislation providing health protection for pregnant and breastfeeding.

11. ILO MPC no 183 has been ratified, or the country has a national law equal to or stronger than C183.

12. The ILO MPC no 183 has been enacted provisions equal to or stronger than 183.

5. Health and Nutrition Care System

1. A review of health provider schools and pre-service education programmes in the country indicates that infant and young child feeding curricular session plans are adequate/inadequate

2. Standards or guidelines for mother-friendly childbirth procedures and support have been developed and disseminated to all facilities and personnel providing maternity care.

3. There are in-service training programmes providing knowledge and skills related to infant and young child feeding for relevant health/nutrition care providers.

4. Health workers are trained with responsibility towards Code Implementation as a key input.

5. Infant feeding related content and skills are integrated, as appropriate into training programmes focusing on relevant

topics (diarrheal disease, acute respiratory infection, integrated management of childhood illness, well-child care, family planning, nutrition, the Code, HIV/AIDS, etc)

6. These in-service training programmes are being provided throughout the country.

7. Child health policies provide for mothers and babies to stay together when one of them is sick.

6. Mother Support and Community Outreach

1. All pregnant women have access to community-based support system and services on infant and young child feeding.

2. All women have access to support for infant and young child feeding after birth.

3. Infant and young child feeding support services have national coverage.

4. Community-based support services for pregnant and breastfeeding woman are integrated into an overall infant and young child health and development strategy (inter-sectoral and intra-sectoral).

5. Community-based volunteers and health workers possess correct information and are trained in counseling and listening skills for infant and young child feeding.

7. Information Support

1. There is a comprehensive national information, education and communication (IEC) strategy for improving infant and young child feeding.

2. IEC programmes (e.g World Breastfeeding week) that include infant and young child feeding are being actively implemented at the local levels.

3. Individual counseling and group education services related to infant and young child feeding are available.

4. The content of IEC messages is technically correct, sound, based on national or international guidelines.

5. A national IEC campaign or programme using electronic and print media and activities has channeled messages on infant and young child feeding to targeted audiences in the last 12 months.

8. Infant Feeding and HIV

1. The country has a comprehensive policy on infant and young child feeding that includes infant feeding and HIV.

2. The infant feeding and HIV policy gives effect to the International Code/National Legislation.

3. Health staff and community workers receive training on HIV and infant feeding policies, the risks associated with various feeding options for infants of HIV-positive mothers and how to provide counselling and support.

4. Voluntary and Confidential Counselling and Testing (VCCT) is available and offered routinely to couples who are considering pregnancy and to pregnant women.

5. Infant feeding counseling in line with current international recommendations and locally appropriate is provided to HIV-positive mothers.

6. Mothers are supported in making implementation of these decisions as safe as possible.

7. Special efforts are made to counter misinformation on HIV and infant feeding and to promote, protect and support

6 months of exclusive breastfeeding and continued in the general population.

8. On-going monitoring is in place to determine the effects of interventions to prevent HIV transmission through breastfeeding on infant feeding practices and overall health outcomes for mothers and infants, including those who are HIV- negative or of unknown status.

9. The Baby-Friendly Hospital Initiative incorporates provision of guidance to hospital administrators and staff in setting with high HIV prevalence on how to assess the needs and provide support for HIV-positive mothers.

9. Infant Feeding during Emergencies

1. The country has a comprehensive policy on infant and young child feeding that includes infant feeding in emergencies.

2. Person (s) tasked with responsibility for national co-ordination with United Nations, donors, military and non-government organizations regarding infant and young child feeding in emergency situations have been appointed.

3. An emergency preparedness plan to undertake activities to ensure exclusive breastfeeding and appropriate complementary feeding and to minimize the risk of artificial feeding.

4. Resources have been identified for implementation of the plan during emergencies.

5. Appropriate teaching materials on infant and young child feeding in emergencies have been integrated into pre-service and in-service training for emergency management and relevant health care personnel.

10. Monitoring and Evaluation

1. Monitoring and evaluation components are built into major infant and young child feeding programme activities.

2. Monitoring or Management Information System (MIS) data are considered by programme managers in the integrated management process.

3. Adequate baseline and follow-up data are collected to measure outcomes for major infant and young child feeding programme activities.

4. Evaluation results related to major infant and young child feeding programme activities are reported to key decision-makers.

5. Monitoring of key infant and young child feeding practices is built into a broader nutritional surveillance and/or health monitoring system or periodic national health surveys.

Appendix 3

List of Competencies used in CE

Tier 1 Core Public Health Competencies

Domain #1: Analytic/Assessment Skills
Identifies quantitative and qualitative data and information (e.g., vital statistics, electronic health records, transportation patterns, unemployment rates, community input, health equity impact assessments) that can be used for assessing the health of a community
Applies ethical principles in accessing, collecting, analyzing, using, maintaining, and disseminating data and information
Uses information technology in accessing, collecting, analyzing, using, maintaining, and disseminating data and information
Selects valid and reliable data
Identifies gaps in data
Describes public health applications of quantitative and qualitative data
Uses quantitative and qualitative data
Describes how evidence (e.g., data, findings reported in peer-reviewed literature) is used in decision making
Domain #2: Policy Development/Program Planning Skills
Identifies current trends (e.g., health, fiscal, social, political, environmental) affecting the health of a community
Describes implications of policies, programs, and services
Explains the importance of evaluations for improving policies, programs, and services
Domain #3: Communication Skills
Communicates in writing and orally with linguistic and cultural proficiency (e.g., using age-appropriate materials, incorporating images)
Domain #5: Community Dimensions of Practice Skills
Describes the programs and services provided by governmental and non-governmental organizations to improve the health of a community
Recognizes relationships that are affecting health in a community (e.g., relationships among health departments, hospitals, community health centers, primary care providers, schools, community-based organizations, and other types of organizations)
Domain #6: Public Health Sciences Skills
Retrieves evidence (e.g., research findings, case reports, community surveys) from print and electronic sources (e.g., PubMed, Journal of Public Health Management and Practice, Morbidity and Mortality Weekly Report, The World Health Report) to support decision making
Recognizes limitations of evidence (e.g., validity, reliability, sample size, bias, generalizability)
Describes evidence used in developing, implementing, evaluating, and improving policies, programs, and services
Domain #7: Financial Planning and Management Skills
Describes government agencies with authority to impact the health of a community
Describes program performance standards and measures
Domain #8: Leadership and Systems Thinking Skills
Incorporates ethical standards of practice (e.g., Public Health Code of Ethics) into all interactions with individuals, organizations, and communities
Describes public health as part of a larger inter-related system of organizations that influence the health of populations at local, national, and global levels

Participates in professional development opportunities
Describes ways to improve individual and program performance

Global Health Concentration Competencies

Exhibit interpersonal skills that demonstrate willingness to collaborate, trust building abilities, and respect for other perspectives
Apply the health equity and social justice framework for the analysis of strategies to address health disparities across different populations
Conduct evaluation and research related to global health
Enhance socio-cultural and political awareness
Apply systems thinking to analyze a diverse range of complex and interrelated factors shaping health at local, national, and international levels