



unicef 
for every child



Nurturing the first



1000 DAYS

A Nutrition Study in Belize

Nurturing the first **1000 DAYS:**

A Nutrition Study
in Belize

Study commissioned by: United Nations Children's Fund, Belize, and Ministry of Health and Wellness, Belize

Authors: Dr Silvie Palacios, Dr Jurgita Slekiene, Dr Anna Gamma, Ranas Ltd.

© United Nations Children's Fund (UNICEF) Belize, and Ministry of Health and Wellness, Belize, October 2023



CONTENTS

| | |
|---|-----------|
| 1. INTRODUCTION | 1 |
| 1.1. Protection and Promotion of Breastfeeding | 4 |
| 1.2. Complementary Feeding | 5 |
| 1.3. Ensuring Appropriate Use of Breastmilk Substitutes | 6 |
| 1.4. Stunting, Maternal Nutrition, ECD and BabyWASH | 7 |
| 1.5. Breastfeeding and Mental Health | 8 |
| 1.6. Breastfeeding Policy, Code and the Baby-Friendly Hospital Initiative | 10 |
| 2. METHODOLOGY | 11 |
| 2.1. Study 1: Quantitative Analysis | 11 |
| 2.2. Study 2: Qualitative Study | 12 |
| 2.3. Mixed Methods | 12 |
| 2.4. Final Workshop | 12 |
| 3. RESULTS AND DISCUSSION | 13 |
| 3.1. Study 1: Quantitative analysis | 13 |
| 3.2. Study 2: Qualitative Analysis | 24 |
| 4. CONCLUSIONS AND RECOMMENDATIONS | 47 |
| 4.1. Study 1: Quantitative Analysis | 47 |
| 4.2. Study 2: Qualitative Analysis | 49 |
| 4.3. Stunting | 54 |
| 4.4. Breastfeeding | 55 |
| 4.5. Complementary Feeding | 56 |
| 4.6. Women's Empowerment | 57 |
| 4.7. Policy, Advocacy, Enabling Environment | 58 |
| 4.8. Behaviour Change Campaigns and Messaging | 58 |
| 4.9. Education | 61 |
| 4.10. Mental Health | 61 |
| 4.11. Next Steps | 62 |
| 5. ANNEXES | 63 |
| 5.1 Background | 63 |
| 5.2 Methodology | 66 |
| 5.3 Results | 70 |
| 5.4 Materials | 89 |
| 5.5 Questionnaires | 91 |
| 5.6 Bibliography | 92 |
| 5.7 Materials for Final Workshop | 97 |

LIST OF TABLES

- Table 1:** Prevalence of continued breastfeeding and complementary feeding over time (2006, 2011, 2015/2016) | [17](#)
- Table 2:** Introduction of complementary food to children aged 6–8 months over time (2006, 2011, 2015/2016) | [18](#)
- Table 3:** Introduction of complementary food to children aged 6–8 months by area (urban/rural) over time (2006, 2011, 2015/2016) | [18](#)
- Table 4:** Correlations of exclusive breastfeeding of children aged 0–5 months, with key indicators | [20](#)
- Table 5:** Correlations of stunting (percentage of height-for-age below -2 SD) of children under five, with key indicators | [21](#)
- Table 6:** Changes in exclusive breastfeeding rates over time (2006, 2011, 2015/2016) | [22](#)
- Table 7:** Changes in stunting over time (2006, 2011, 2015/2016) | [22](#)
- Table 8:** Factors that key informants would change about breastfeeding in Belize | [27](#)
- Table 9:** WHO food groups for complementary feeding, identified by caregivers, key informants and FGDs | [28](#)
- Table 10:** Other foods provided as part of complementary feeding, identified by caregivers, key informants and FGDs | [28](#)
- Table 11:** Influences on healthy growth for babies and measures to prevent stunting, identified by caregivers | [29](#)
- Table 12:** Reasons for stunting, identified by caregivers | [29](#)
- Table 13:** Possible issues with complementary feeding, identified by key informants | [30](#)
- Table 14:** Significant correlations between breastfeeding indicators and psychosocial and demographic factors | [31](#)
- Table 15:** Gaps in breastfeeding knowledge prior to facing it, provided by caregivers and key informants | [32](#)
- Table 16:** Barriers to breastfeeding, provided by caregivers and key informants | [32](#)
- Table 17:** Most used communication channels about breastfeeding, identified by caregivers and key informants | [33](#)
- Table 18:** Information received by mothers as part of BFHI, provided by caregivers | [34](#)
- Table 19:** Views of key informants on how BFHI could be improved | [35](#)
- Table 20:** Research findings to inform evidence-based social and behaviour change | [48](#)

LIST OF FIGURES

- Figure 1:** Prevalence of exclusive breastfeeding over time (2006, 2011 and 2015/2016) | [15](#)
- Figure 2:** Prevalence of exclusive breastfeeding by area (urban/rural) over time (2006, 2011 2015/2016) | [16](#)
- Figure 3:** Prevalence of continued breastfeeding and complementary feeding by area (urban/rural) over time (2006, 2011, 2015/2016) | [17](#)
- Figure 4:** Child stunting prevalence by age and over time (2006, 2011, 2015/2016) | [19](#)
- Figure 5:** Child stunting prevalence by district and over time (2006, 2011, 2015/2016) | [19](#)
- Figure 6:** General breastfeeding, exclusive breastfeeding under six months of age and breastfeeding right after birth | [25](#)
- Figure 7:** Reasons for and benefits of breastfeeding, provided by caregivers, key informants and FGDs | [25](#)
- Figure 8:** Reasons against and disadvantages of breastfeeding, provided by caregivers, key informants and FGDs | [26](#)

ACRONYMS

| | | | |
|----------------|---|---------------|-----------------------------------|
| BCT | Behaviour Change Technique | KII | Key Informant Interview |
| BF | Breastfeeding | MICS | Multiple Indicator Cluster Survey |
| BFHI | Baby-Friendly Hospital Initiative | MoHW | Ministry of Health and Wellness |
| BNBP | Belize National Breastfeeding Policy | PPD | Postpartum Depression |
| EBF | Exclusive Breastfeeding | RQ | Research Question |
| ECD | Early Child Development | SDG | Sustainable Development Goal |
| FGD | Focus Group Discussion | UNICEF | United Nations Children’s Fund |
| HBM | Health Belief Model | WASH | Water, Sanitation and Hygiene |
| HECOPAB | Health Education and Community Participation Bureau | WHO | World Health Organization |
| KI | Key Informant | | |



INTRODUCTION

UNICEF advocates for the protection of children's rights, to help meet their basic needs and to expand their opportunities to reach their full potential. Promoting access to quality nutrition, encouraging breastfeeding and appropriate feeding, preventing stunting and improved hygiene are essential to reduce infant and child mortality and improve health, and thus to expand children's opportunities in life.

The most recent Multiple Indicator Cluster Survey (MICS, conducted 2015/2016) shows that the nutritional status of children under five years of age remains a concern in Belize, with 4.6 per cent underweight, 15 per cent stunted, 5.7 per cent experiencing wasting and 7.3 per cent overweight. Moreover, only 33 per cent of children under six months of age are exclusively breastfed, while 53 per cent receive continued breastfeeding with complementary feeding aged 6–24 months.

The main actors in the Belize health sector, the Ministry of Health and Wellness (MoHW) and UNICEF Belize, are looking to improve this situation. The Baby Friendly Hospital Initiative (BFHI), which was initiated in Belize in 2006, is the country's most important public health intervention targeting breastfeeding.

This study evaluates the influence of BFHI on breastfeeding, identifies key barriers and other factors that influence breastfeeding.

It aims to study the prevalence of:

- breastfeeding within one hour of birth
- exclusive breastfeeding for the first six months of life
- continued breastfeeding up to the second year of life or beyond

Analyses of breastfeeding, complementary feeding and stunting are performed through two studies, a quantitative analysis of existing MICS data and a qualitative analysis of recollected data during a field visit. The aims of the studies are:

The aims of study 1, the quantitative analysis, are to:

- describe the levels of, and inequalities in, key indicators on breastfeeding and other feeding practices (complementary feeding)
- describe macro-level trends between MICS-3 and MICS-5
- identify the factors associated with changes in these outcomes over time

Study 2, the qualitative analysis, asks the following questions:

- what are the practices and the motivations of women to breastfeed a child?
- what are the motivating and inhibiting factors for breastfeeding at three stages:
 - early initiation of breastfeeding one hour after birth
 - exclusive breastfeeding in the first six months of life
 - continued breastfeeding up to two years or beyond
- to which extent do women recognize breastfeeding interventions or BFHI?
- how feasible are mobile health interventions to promote breastfeeding?

This study will explore the following key factors affecting children's development: breastfeeding, complementary feeding formula feeding, stunting and early childhood development (ECD). It will also provide an overview of BFHI and its current status in Belize.



1.1. Protection and Promotion of Breastfeeding

Breastfeeding is one of the most effective investments a country can make (UNICEF/WHO, 2017), with expanding evidence of its health benefits for both mother and child. Exclusive breastfeeding is a foundation of child survival and health. Breastfeeding serves as a child's first immunization, helping to prevent respiratory infections, diarrhoeal diseases and other potentially life-threatening ailments (WHO, 2021). Studies show clear short-term benefits of breastfeeding through the reduced risk of diarrhoea and respiratory infections and thus a lower morbidity and mortality due to the prevention of infectious diseases in childhood. These benefits have been found in low, middle and high-income countries (Horta et al, 2013).

The World Health Organization (WHO) recommends that infants begin breastfeeding in the first hour of life, are exclusively breastfed for the first six months of life. After this, adequate, safe and properly fed complementary foods are introduced, while continuing breastfeeding for up to two years of age or beyond (WHO, 2021).

Pre-lacteal feeding occurs in many developing countries (Amele, et al., 2019), where babies are given substances other than breastmilk (such as water or honey), sometimes instead of colostrum, during the first three days after birth. This is considered an unnecessary, detrimental or even harmful practice.

A meta-analysis about the long-term health benefits of breastfeeding reveals that the likelihood of being overweight is reduced by 13 percent for children who are breastfed (Horta et al, 2015). The UNICEF Programming Guidance on Prevention of Overweight and Obesity in Children and Adolescents (UNICEF, 2019) states that all breastfeeding practices (ever breastfeed, exclusive breastfeeding or a longer duration of breastfeeding) reduce the risk of overweight. The decreased risk of

obesity helps reduce noncommunicable diseases like diabetes, hypertension and cardiovascular diseases as children grow older (Malta Health and Disease Prevention Directorate, 2015). Better gut health, which is achieved by population of the child's body and gut with the maternal microbiome through skin-to-skin contact and early and exclusive breastfeeding, also has a protective role. In general, breastfeeding also establishes better satiety patterns which are related to the nutrients in breastmilk (Horta et al., 2015). The disadvantages of bottle feeding (less nutrition, risk of contaminated water, less easy to digest, more expensive, no infection-fighting antibodies) can be avoided by breastfeeding.

Breastfeeding supports the intellectual development, educational achievement and social intelligence of children (AlThuneyyan et al., 2022) and creates a strong bond between mother and child. For mothers, the risk of breast and ovarian cancers and cardiovascular diseases is reduced by breastfeeding (Anstey et al, 2017; Tschiderer et al., 2022).

The health impacts of breastfeeding have economic and social implications for societies. The preventive effects of breastfeeding on obesity and certain cancers has economic implications for the health system. By contrast, more than half a million of global childhood deaths are linked to inappropriate breastfeeding (Walters, 2019).

While this study focuses on exclusive and constant breastfeeding, its overall concern is with stunting. This is in line with the literature, which shows that the period between 6 and 24 months of age is among the most critical periods for linear growth (Shrimpton, 2001) and the peak of stunting prevalence in developing countries, due to high nutritional needs coupled with limited quality and quantity of complementary foods (Dewey & Adu-Afarwuah, 2008).

Breastfeeding is key for the 2030 Agenda for Sustainable Development and contributes to many of the Sustainable Development Goals (SDGs) including gender equality issues which can include workplace rights (UN, 2015). Breastfeeding is also an important nutrition intervention to reduce the under-five mortality rate.

1.2. Complementary Feeding

According to WHO (2022), children should be provided complementary foods while continuing to be breastfed from the age of six months to two years. Yet many children do not receive nutritionally adequate and safe complementary foods or the dietary diversity and feeding frequency that is appropriate for their age.

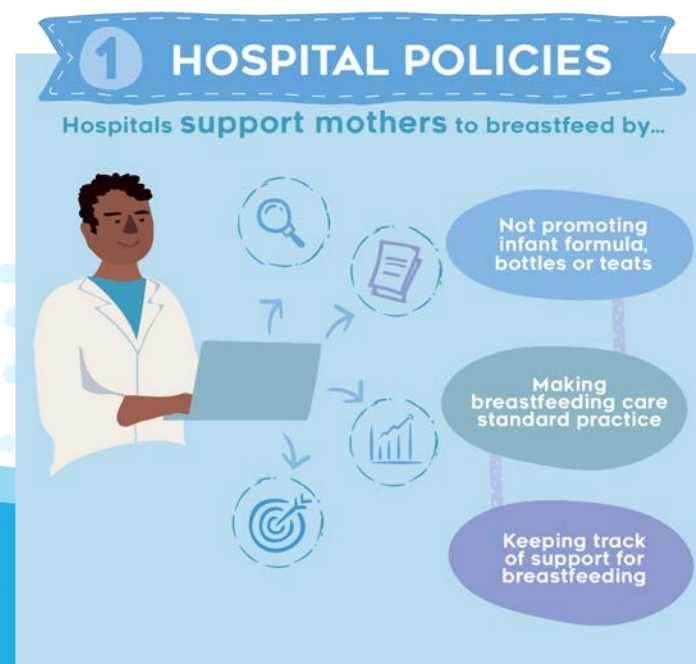
Appropriate complementary feeding entails continued breastfeeding until two years of age, introducing small amounts of food at six months, increasing the food gradually as the child gets older, and feeding slowly, practising good hygiene.

Gradual increase also applies for food consistency, variety and the number of times the child is fed, starting from 2–3 meals per day for babies aged 6–8 months, and 3–4 meals per day for infants aged 9–23 months of age, with 1–2 additional snacks as required.

Fortified complementary foods or vitamin-mineral supplements should be used, and if the child is sick, fluid intake, including breastmilk, should be increased (WHO, 2022). WHO recommends (2008) that children aged 6–23 months consume foods from at least from four food groups (out of eight) every day. These are (DHS-2016 survey):

The Stronger with Breastmilk Only initiative (www.breastmilkonly.com) in West and Central Africa provides a good example of an intervention directed at promoting the key recommended practices in infant and young child feeding. It forms part of the Global Breastfeeding Collective (www.globalbreastfeedingcollective.org) led by UNICEF and WHO, through which international development agencies collectively advocate for smart investments in breastfeeding.

1. Grains, roots, and tubers (e.g., barley, maize, wheat)
2. Legumes and nuts (e.g. chickpeas, beans)
3. Dairy products (e.g. milk, yogurt, cheese)
4. Flesh foods (e.g. meat, poultry, fish products)
5. Eggs
6. Vitamin A-rich fruits and vegetables (e.g. mango, pumpkin, carrots)
7. Other fruits and vegetables (e.g. onions, tomatoes, bananas)
8. Breastmilk



1.3. Ensuring Appropriate Use of Breastmilk Substitutes

Many mothers struggle to initiate breastfeeding, and existing health-care practices in many facilities are a barrier to the breastfeeding process for new mothers. Even mothers who start breastfeeding satisfactorily often discontinue within a few weeks or start supplementary feeding with breastmilk substitute very early.

These practices can lead to malnutrition, which is an increasing problem in many countries. Information on how to feed infants comes from sources like family beliefs, community practices and information from health workers.

UNICEF and WHO reported in 2022 that parents and pregnant women worldwide are exposed to aggressive marketing of infant breastmilk substitute (UNICEF/WHO, 2022), and that the US\$ 55 billion breastmilk-substitute industry uses systematic and unethical marketing strategies to influence parents' decisions about feeding their children, and using exploitative practices that put children's nutrition at risk and violate international obligations. WHO Director-General Tedros Adhanom Ghebreyesus said, "This report shows very clearly that infant milk marketing remains unacceptably widespread, misleading and aggressive," and called for regulations on exploitative marketing to be "urgently adopted and enforced to protect children's health".

The report points out that the industry also makes use of sponsored advice networks and helplines,

promotions, gifts and influencing the training and recommendations of health professionals.

It highlights that the industry often provides parents and health workers with misleading and unscientific information. In addition, the industry violates the International Code of Marketing of Breast-milk Substitutes, a landmark public health agreement designed to protect mothers from aggressive marketing.

A survey of 8,500 parents and pregnant women and 300 health workers worldwide for the UNICEF/WHO report found that 84 per cent of women surveyed in the United Kingdom, 92 per cent in Vietnam and 97 per cent in China have been exposed to breastmilk substitute marketing. In all countries surveyed, women express a strong desire to exclusively breastfeed (from 49 per cent in Morocco to 98 per cent in Bangladesh), but persistent misleading advertising messages reinforce myths about breastfeeding and breastmilk and undermine women's confidence in their ability to breastfeed or its suitability for children. Common myths include: breastmilk is unsuitable for infants, breastmilk substitutes improve development or the immune system, and the quality of breast milk declines over time.

Breastfeeding rates worldwide have increased only slightly over the past two decades, while sales of breastmilk substitutes have more than doubled.

1.4. Stunting, Maternal Nutrition, ECD and Baby WASH

Stunting is an outcome of chronic malnutrition due to a failure to receive adequate nutrition over a long period and/or recurrent or chronic illness. It is measured using height-for-age, a measure of linear growth. Children whose height-for-age is more than two standard deviations below the median of the reference population are considered short for their age and are classified as moderately or severely stunted. Additionally, those whose height-for-age is more than three standard deviations below the median are classified as severely stunted.

Investments in ECD have substantial benefits that include improved school performance, reduced child morbidity and mortality, higher productivity and economic growth, reduced gender-related inequalities and breaking intergenerational cycles of poverty (van der Gaag, 2010). For newborns and small babies, risk factors related to lack of proper nutrition, coupled with other factors relating to inadequate water, sanitation and hygiene (WASH), poor access to and quality of health care (e.g. low immunization rates), sub-optimal maternal and child-care practices, overcrowding, etc. lead to higher rates of stunting and wasting in children (Ngure et al., 2014).

Following a detailed review of the evidence on the links between poor WASH and ECD (CLTS, 2012), the concept of Baby WASH has been proposed. This approach, which encompasses food hygiene, clean play areas, control of animal faeces and handwashing by children, has been proposed to address these neglected pathways of contagion (Ngure et al., 2014).

Adequate nutrition from the early stages of development, particularly during pregnancy and the first two years of life, is a “window of opportunity” for appropriate growth and development (Amugsi et al., 2015). Complementary feeding refers to the timely introduction of safe and nutritious foods in addition to continued breastfeeding (WHO, 2003). This becomes

necessary after the first six months of a baby’s life, when an infant’s nutrition needs extend beyond breastmilk (WHO, 2021). If complementary foods are not introduced at six months of age, or if they are given inappropriately, an infant’s growth may falter (WHO, 2021).

Nutrition during pregnancy and the lactation phase has an impact on the baby’s health and development. Maternal diet can have an impact on child stunting through several pathways. In cultures where all members of a household eat the same food, mothers, as the ones preparing the food, may decide what is eaten. Despite their different nutritional needs during pregnancy and lactation, women often do not change their diets. Real and perceived financial barriers may play an important role in choice of diet, as well as gender roles, sociocultural values and access to information (Hasan et al., 2019).

A study of breastfeeding in Latin America and the Caribbean (Chessa et al., 2011) concluded that although breastfeeding benefits all children, the short-term benefits for child survival and reduced morbidity – and hence the inherent risks of not breastfeeding – can differ greatly by population subgroup because of differences in underlying risk factors. These risk factors include exposure to pathogens because of poor WASH and lack of health care to deal with the ensuing diseases (Habicht et al., 1986). A recent study about the association between maternal work and exclusive breastfeeding in Latin America and the Caribbean has also revealed lower prevalence of exclusive breastfeeding of infants whose mothers are employed. The prevalence of exclusive breastfeeding is higher in countries with a larger percentage of women in the labour force (Santos et al, 2022). Psychosocial factors associated with high intention to practise exclusive breastfeeding in the first six months in Lao PDR include attitude (effort, positive feelings), personal obligation, confidence in performance and

commitment (Mosler & Slekiene, 2019).

Nutritional deficiency at early stages of development (during pregnancy and the first two years of life) can lead to stunting (WHO, 2014). Stunting is a major global health priority (UNICEF, 2009), affecting nearly 165 million children under the age of five globally (Black et al., 2013). Stunting is a cyclical process because women who were themselves stunted in childhood tend to have stunted offspring, creating an intergenerational cycle of poverty and reduced human capital that is difficult to break (Martorell & Zongrone, 2012). Studies of variation in stunting prevalence across countries (Frongillo et al., 1997) and between different populations within countries (Quinn et al., 1995; Shen et al., 1996) demonstrate the importance of socioeconomic factors. Stunting prevalence is therefore a good indicator of inequalities in human development (de Onis et al., 2000). Across

80 countries, those with a high prevalence of stunting tended also to have larger socioeconomic inequalities (Bredenkamp et al., 2014). The period from 6 to 24 months of age is one of the most critical periods for linear growth (Shrimpton, 2001) and the peak of stunting prevalence in developing countries, due to high demand for nutrients coupled with limited quality and quantity of complementary foods (Dewey & Adu-Afarwuah, 2008).

Underweight and wasting are directly linked to stunting. Stunting, underweight and wasting frequently coexist, and children with multiple measures of anthropometric failure have a compounded risk of morbidity and mortality (Nandy et al., 2005; McDonald et al., 2013). In Belize, the prevalence of underweight is 4.6 per cent among in children under five years of age, of wasting 1.8 per cent and of stunting 15 per cent (MICS 2015/2016).

1.5. Breastfeeding and Mental Health

Research indicates a high prevalence (19.8 per cent) of maternal mental disorders in low- and middle-income countries (Fisher et al., 2021). A number of studies have found that maternal well-being is associated with child growth and development (Bennett et al., 2016), and child nutrition status (Harpham, 2005). Mental health may be important for the performance of appropriate WASH behaviours (Ranasinghe et al, 2016; Slekiene & Mosler, 2018, 2019, 2021; Jiang et al, 2021), but there is limited research on associations between mental health, Baby WASH and nutrition-related behaviours such as exclusive breastfeeding. For this reason, this study includes a mental health questionnaire (SRQ-20; WHO, 1994) in its qualitative data collection tool to investigate the impact of mental health on breastfeeding practices among caregivers.



1.6. Breastfeeding Policy, Code and the Baby-Friendly Hospital Initiative

The Belizean Ministry of Health and Wellness (MoHW) recently revised the Belize National Breastfeeding Policy (BNBP) dating to 1997, and added updated information in light of new evidence and improvements in facilities to support breastfeeding. The purpose of the BNBP is to increase the prevalence to 100 per cent, both of exclusive breastfeeding from birth to 6 months of age, and the maintenance of breastfeeding into the second year of life. The BNBP provides areas for action in public and private health care and social settings and includes the workplace and educational institutions as key settings.

Two policies, the Baby Friendly Hospital Initiative (BFHI) and the International Code for the Marketing of Breast Milk Substitutes, are the foundation of the BNBP.

BFHI, which was formulated in 1991, is the primary intervention strategy of UNICEF and WHO to support facilities providing maternal and neonatal services worldwide to motivate breastfeeding and to implement the Ten Steps to Successful Breastfeeding. The initiative also supports mothers who are not breastfeeding and mothers living with HIV.

Many mothers have difficulty breastfeeding from the beginning, while many facilities offer limited support to establish breastfeeding. BFHI seeks to generate a health-care environment that supports parents' acquisition of skills necessary to exclusively breastfeed for the first six months, and to continue breastfeeding for two years or beyond.

The Ten Steps to Successful Breastfeeding were revised in 2018 and continue to be utilized throughout the world as the basis of BFHI. Evidence shows that the Ten Steps improve breastfeeding rates: A systematic review of 58 studies on maternity and new-born care (Perez-Escamilla et al., 2016) found that following the

Ten Steps had positive impacts on short, medium and long-term breastfeeding outcomes. Furthermore, a dose-response relationship was found between the number of the steps women were exposed to and the likelihood of improved breastfeeding outcomes. Community support seems to be especially important in sustaining the impact of BFHI on breastfeeding in the longer term.

The Ten Steps to Successful Breastfeeding are:

1. Comply fully with the International Code of Marketing of Breastmilk Substitutes and relevant World Health Assembly resolutions; have a written infant feeding policy that is routinely communicated to staff and parents; and establish ongoing monitoring and data management systems.
2. Ensure that staff have sufficient knowledge, competence and skills to support breastfeeding.
3. Discuss the importance and management of breastfeeding with pregnant women and their families.
4. Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.
5. Support mothers to initiate and maintain breastfeeding and manage common difficulties.
6. Do not provide breastfed newborns any food or fluids other than breastmilk, unless medically indicated.
7. Enable mothers and their infants to remain together and to practise rooming-in 24 hours a day.
8. Support mothers to recognize and respond to their infants' cues for feeding.
9. Counsel mothers on the use and risks of feeding

bottles, teats and pacifiers.

10. Coordinate discharge so that parents and their infants have timely access to ongoing support and care.

Hospitals are accredited by IUNICEF as Baby Friendly (a quality standard designation including a certification) once they have made the institutional and practice changes necessary to meet the stringent BFHI assessment criteria. A Baby Friendly Hospital is a healthcare facility where the WHO/UNICEF Ten Steps are the standard for maternal and childcare with the aim of effectively protecting, promoting, and supporting exclusive breastfeeding from birth (WHO & UNICEF, 2009).

A study (Venancio et al., 2012) found positive effects on breastfeeding indicators in Brazil: infants born in BFHs are 9 per cent more likely to be breastfed in the first hour of life and 6 per cent more likely to be breastfed on the first day at home, and exclusive breastfeeding is 13 per cent more likely in children under two months of age, 8 per cent more likely in those under three months of age, and 6 per cent more

likely in those under six months of age if born in Baby Friendly Hospitals.

In Belize, all hospitals nationwide participate in BFHI. About 98 per cent¹ of mothers are estimated to give birth in a polyclinic and since all clinics participate in BFHI in Belize, no comparisons can be undertaken with the data at hand. The country's revised BNBP now aims to extend the designation of Mother Baby Friendly institutions to private health-care facilities.

A crucial component of BFHI is the International Code for the Marketing of Breast Milk Substitutes, developed in 1981 to end inappropriate promotion of foods for infants and young children. It applies to marketing and practices related to quality, availability and information concerning the use of breastmilk substitutes, including infant formula. The code contributes to the provision of safe and adequate nutrition for infants through the protection and promotion of breastfeeding, and by ensuring breastmilk substitutes are properly used through appropriate marketing and distribution (WHO, 1981). Efforts are underway to pass the code as a law in Belize.



¹ Personal communication with a key informant; no published data.



METHODOLOGY

2.1. Study 1: Quantitative Analysis

Study 1 comprises a statistical analysis of MICS data from 2006, 2011 and 2015/2016 (MICS 3, 4 and 5) **(for a detailed description of the methodology, see Annex 5.2).**

The following research questions were addressed in this study:

- **Research Question (RQ) 1:** What are the characteristics of the levels and inequalities of key indicators for exclusive breastfeeding, continued breastfeeding and complementary feeding practices, and stunting?
- **RQ2:** What are the characteristics of macro-level trends in these outcomes from MICS 3 to MICS 5?
- **RQ3:** Which factors are associated with changes in these outcomes over time?

The specific objectives investigated to answer these questions were:

- **Objective 1:** Prevalence of: (i) exclusive breastfeeding for the first 6 months (babies aged 0–5 months); (ii) continued breastfeeding and complementary feeding practices (children aged 6–23 months); (iii) stunting
- **Objective 2:** Predictors of: (i) exclusive breastfeeding for the first 6 months (babies aged 0–5 months) (ii) continued breastfeeding and complementary food practices (children aged 6–23 months); (iii) stunting
- **Objective 3:** Change over time (T1, T2, T3), through a comparison of MICS data from 2006, 2011 and 2015/2016
- **Objective 4:** Underlying mechanisms of exclusive breastfeeding for the first six months, continued breastfeeding and complementary feeding (children, aged 6–23 months), and stunting: mediators.

2.2. Study 2: Qualitative Study

Study 2 is based on a desk review conducted between July and August 2022, and qualitative data collection in Belize from 24 August to 10 September 2022. During the data collection phase, the following methods were applied:

- ▶ Thirty-eight face-to-face interviews with caregivers (mainly women) of children under two years of age
- ▶ Eleven key informant interviews (KII), of which the majority were conducted in person and some performed online
- ▶ Seven focus group discussions (FGD), each with an average of seven participants

The following research questions were addressed in this study:

- ▶ **RQ1:** What are the practices and the motivations of women to breastfeed?
- ▶ **RQ2:** What are the motivating and inhibiting factors for breastfeeding at three stages: (i) early initiation of breastfeeding within an hour of birth, (ii) exclusive breastfeeding for the first six months of life, and (iii) continued breastfeeding to two or more years.
- ▶ **RQ3:** To which extent do women recognize breastfeeding interventions under BFHI?
- ▶ **RQ4:** How feasible are mobile health interventions to promote breastfeeding?

Participants were also invited to comment on the study and on breastfeeding.

2.3. Mixed Methods

The two studies were designed to complement each other. Study 1 analyses available quantitative data from the highly comprehensive MICS surveys, which collect data on a wide range of topics, including breastfeeding and nutrition. This allows to identify trends, developments and statistically sound relationships between variables. Study 2 complements this with an analysis of participants' reasons, arguments and perceptions. This allows to identify barriers to appropriate feeding and reasons for practices.

2.4. Final Workshop

A final workshop was conducted on 2 March 2023, with participants from the Ministry of Health and Wellness, UNICEF, health-care workers, hospital staff and community workers. The results of both studies were presented at this meeting, and the room opened for questions. On the basis of the presented evidence, six working groups compiled goals to different topics in an impact-outcome-output format (see Annex 5.7). Responsible persons for outcomes and outputs were identified and agreements were established, with follow-up dates.



RESULTS AND DISCUSSION

3.1. Study 1: Quantitative Analysis

OBJECTIVE 1:

Prevalence of appropriate/inappropriate feeding practices and stunting

KEY FINDINGS

- ★ Although the prevalence of exclusive breastfeeding in the first six months has increased over the years, two of three children were still not exclusively breastfed in 2015/2016.
- ★ Girls are slightly more likely to be exclusively breastfed for the first six months than boys, however, disparities have decreased and are not statistically significant in the later MICS.
- ★ Mothers with lower education levels are more likely to exclusively breastfeed their babies, compared to mothers with higher education levels; this holds true over time.
- ★ Rural mothers are more likely to practice exclusive breastfeeding than urban mothers.
- ★ Wealthier families are less likely to practice exclusive breastfeeding than poorer families.
- ★ Around 80 per cent of children aged 6–8 months received complementary feeding in 2015/2016; this has doubled since 2006.

- ✦ The prevalence of complementary feeding along with continued breastfeeding is higher in rural areas).
- ✦ At all three measurement points, there was a sharp increase in the prevalence of stunting after 6–11 months of age.
- ✦ In Toledo, every second child was stunted in every edition of the MICS (from 2006 to 2015/2016).
- ✦ Although prevalence of exclusive and continued breastfeeding and complementary feeding is higher in rural areas, among poorer and less educated mothers, the prevalence of stunting is higher among these vulnerable groups.

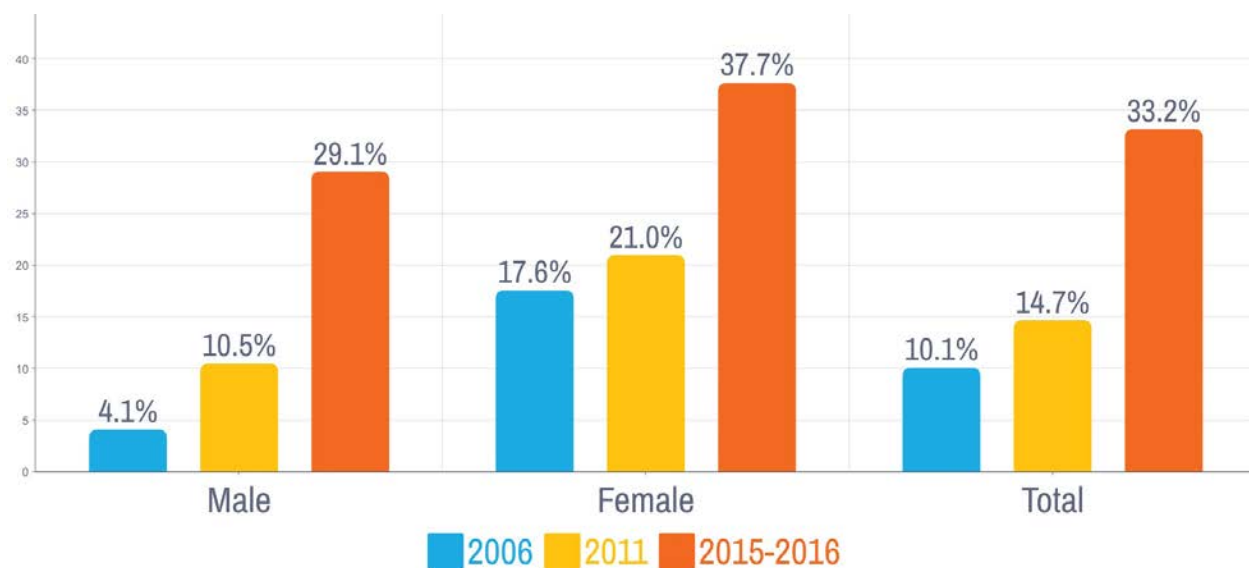
EXCLUSIVE BREASTFEEDING OF CHILDREN AGED 0–6 MONTHS

While rates of exclusive breastfeeding differed by gender in 2006, this difference shrank over the years. Early initiation of breastfeeding shows an upward trend over the years, from 51 per cent in 2006 to 68 per cent in 2015/2016. Differences between urban and rural areas are apparent over the years, as well as differences depending on the education and wealth of the mother. Differences between districts are also visible, but some data points are missing.

While the prevalence of exclusive breastfeeding in the first six months has increased over the years, two of three children were not exclusively breastfed for the first six months of life in 2015/2016 (see Figure 1).

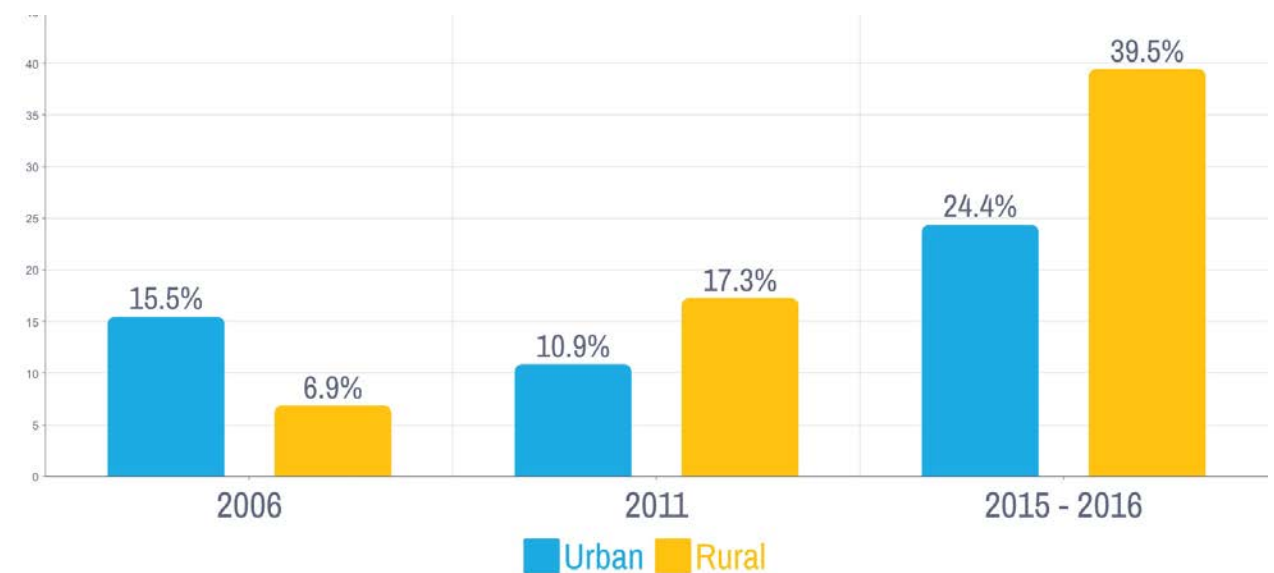
In 2006, girls were more likely to be exclusively breastfed for the first six months compared to boys. These inequalities decreased over the years and were not statistically significant in 2011 and 2015/2016 (see Figure 1).

Figure 1: Prevalence of exclusive breastfeeding over time (2006, 2011 and 2015/2016)



Mothers living in rural areas are more likely to practice exclusive breastfeeding in the first six months, compared to mothers living in urban areas. This difference has increased over time (see Figure 2).

Figure 2: Prevalence of exclusive breastfeeding by area (urban/rural) over time (2006, 2011 2015/2016)



Mothers with a lower education level are more likely to practise exclusive breastfeeding in the first six months compared to mothers with higher education level. This was observed to increase over time (see Annex 5.3, Figure 12).

Wealthier families also tend to practise exclusive breastfeeding less often than poorer families (see Annex 5.3, Figure 13).

For further data on exclusive breastfeeding disaggregated by gender, area, mother’s education, wealth index and region, see Annex 5.3, Table 21.

CONTINUED BREASTFEEDING AND COMPLEMENTARY FEEDING OF CHILDREN AGED 6–24 MONTHS

Data on continued breastfeeding and complementary feeding are not comparable across successive editions of the MICS, as in 2006, children aged 6–9 months, in 2011 children aged 12–15 months, and in 2015/2016 children aged 6–23 months were analysed. Accordingly, only a discussion of the key results is provided.

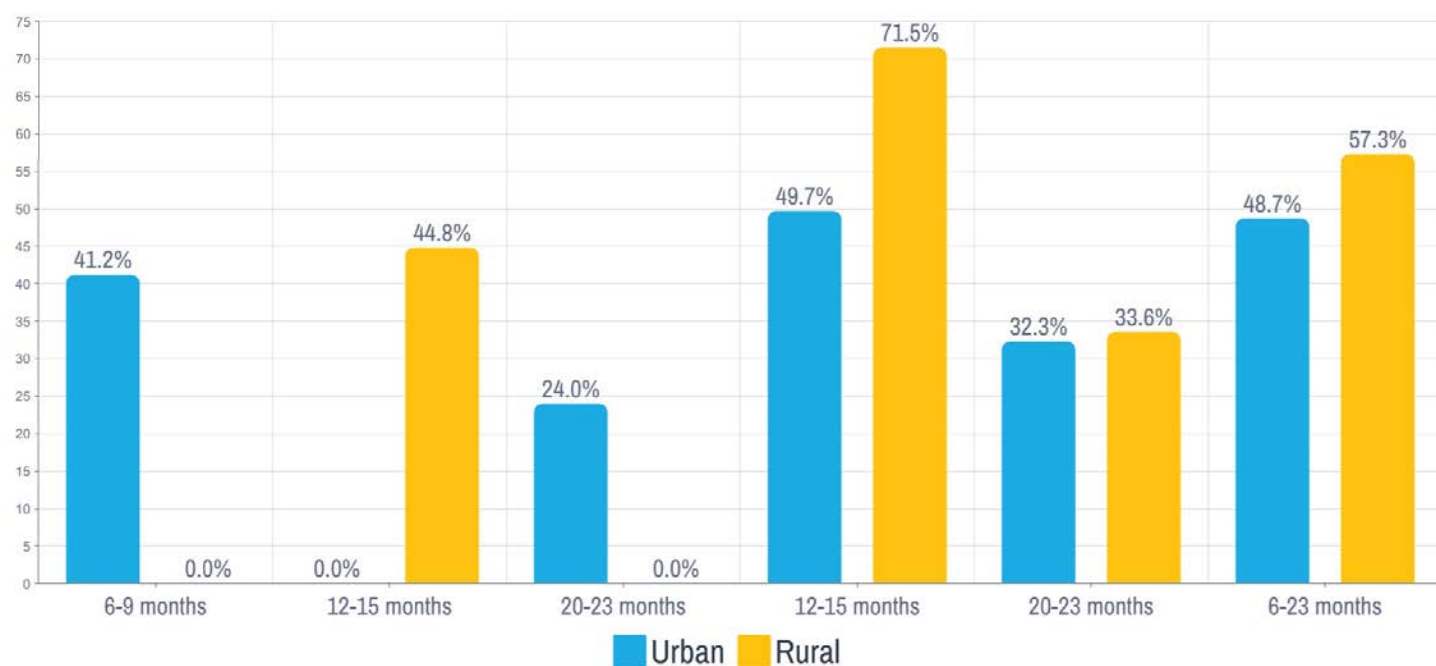
Overall, the prevalence of continued breastfeeding with complementary feeding for children aged 6–23 months showed an increase from 2006 to 2011 and remained stable from 2011 to 2015/2016 (see Annex 5.3, Table 22).

Only small differences by gender were observed. Boys were slightly more likely to have received complementary food compared to girls of the same age (see Annex 5.3, Figure 14 and Table 22).

In rural areas, the prevalence of complementary feeding among children receiving continued breastfeeding was higher (around 60 per cent of children aged 6–23 months in 2015/2016) than in urban areas (see Figure 3 and Annex 5.3, Table 24).

For further data on continued breastfeeding and complementary feeding by mother's education and wealth index over time, see Annex 5.3, Figure 16 and 17.

Figure 3: Prevalence of continued breastfeeding and complementary feeding by area (urban/rural) over time



(2006, 2011, 2015/2016)

The duration of continued breastfeeding decreased from 2006 to 2011 and then remained stable to 2015/2016, while complementary feeding rates increased over the years (see Table 1).

Table 1: Prevalence of continued breastfeeding and complementary feeding over time (2006, 2011, 2015/2016)

| | 2006 | 2011 | 2015/2016 |
|--|-------------|-------------|-------------|
| Continued breastfeeding | 26.8 months | 16.1 months | 17.2 months |
| 2006, 2011: Average number of months of breastfeeding, | | | |
| 2015: Median duration of breastfeeding | | | |
| Complementary feeding | 44% | 67.40% | 78.80% |
| 2006: Timely complementary feeding rate* | | | |
| 2011, 2015/2016: Introduction of solid, semi-solid or soft foods | | | |

* Percentage of children aged 6–8 months who received solid, semisolid or soft foods during the previous day.

The percentages of children who received solid, semi-solid or soft foods during the previous day (complementary feeding), disaggregated by gender and area (urban/ rural) as well as by current breastfeeding status (only for 2011 and 2015/2016) were analysed.

Between 2006 and 2015/2016, the proportion of children who received complementary feeding almost doubled, from 44 per cent to 78.8 per cent (see Table 2).

About 68 per cent of children aged 6–8 months received complementary feeding in 2011 and 82 per cent in 2015/2016. Girls are better provided with complementary feeding than boys, at 64.6 per cent for boys and 70.6 per cent for girls in 2011, and 74.1 per cent for boys and 83.4 per cent for girls in 2015/2016. While the proportion of children receiving complementary feeding has increased in both urban and rural areas over time, urban children do better than rural children. While about 70.8 per cent of urban children and 65.7 per cent of rural children were breastfed in 2011, in 2015/2016 this figure had risen to 86.6 per cent for urban children and 74.9 per cent for rural children.

Table 2: Introduction of complementary food to children aged 6–8 months over time (2006, 2011, 2015/2016)

| CURRENTLY BREASTFED? | 2006 | | 2011 | | 2015/2016 | | ALL | | YES | | NO | | ALL | |
|----------------------|-----------|-----------|-------------|-----------|------------|-----------|-------------|------------|-----------|-----------|------------|-----------|-------------|------------|
| | % | N | % | N | % | N | % | N | % | N | % | N | % | N |
| Male | (*) | 22 | 66.5 | 40 | (*) | 14 | 64.6 | 54 | 74.5 | 52 | (*) | 6 | 74.1 | 58 |
| Female | 36.5 | 26 | 71 | 30 | (*) | 15 | 70.6 | 46 | 90.3 | 47 | (*) | 12 | 83.4 | 58 |
| Total | 44 | 48 | 68.5 | 70 | (*) | 29 | 67.4 | 100 | 82 | 99 | (*) | 17 | 78.8 | 116 |

* Fewer than 25 unweighted cases. For 2006, data only for currently breastfed children is available.

Table 3: Introduction of complementary food to children aged 6–8 months by area (urban/rural) over time (2006, 2011, 2015/2016)

| CURRENTLY BREASTFED? | 2006 | | 2011 | | 2015-16 | | ALL | | YES | | NO | | ALL | |
|----------------------|------|----|------|----|---------|----|------|----|------|----|-----|----|------|----|
| | % | N | % | N | % | N | % | N | % | N | % | N | % | N |
| Urban | 41.2 | 27 | (*) | 18 | (*) | 15 | 70.8 | 33 | (*) | 32 | (*) | 7 | 86.6 | 39 |
| Rural | (*) | 21 | 64.6 | 52 | (*) | 15 | 65.7 | 67 | 79.5 | 67 | (*) | 10 | 74.9 | 77 |

* Fewer than 25 unweighted cases.

For further data on continued breastfeeding and complementary feeding disaggregated by gender, area, mother's education, wealth index and region, see Annex 5.3, Tables 16 and 22–26. However, as previously noted, the disaggregated data is not comparable over the years due to the different age ranges analysed in successive MICS surveys.

MINIMUM DIETARY DIVERSITY

Minimum dietary diversity is defined as receiving foods from at least 4 of 7 food groups (see section 1.2). Minimum dietary diversity was assessed for children aged 6–23 months and was found to be 66.3 per cent in 2015/2016 (higher than global average), 67.6 per cent in 2011 and 36.8 per cent in 2006 (the latter measured for children aged 6–11 months). More than 30 per cent of children aged 6–23 months did not receive minimum dietary diversity in 2011 and 2015/2016, and more than 60 per cent in 2006. However, the age of children assessed in 2011 and 2015-16 was 6–23 months and in 2006 6–11 months, which makes comparison difficult (see also Annex 5.3, Tables 30 and 31).

STUNTING PREVALENCE

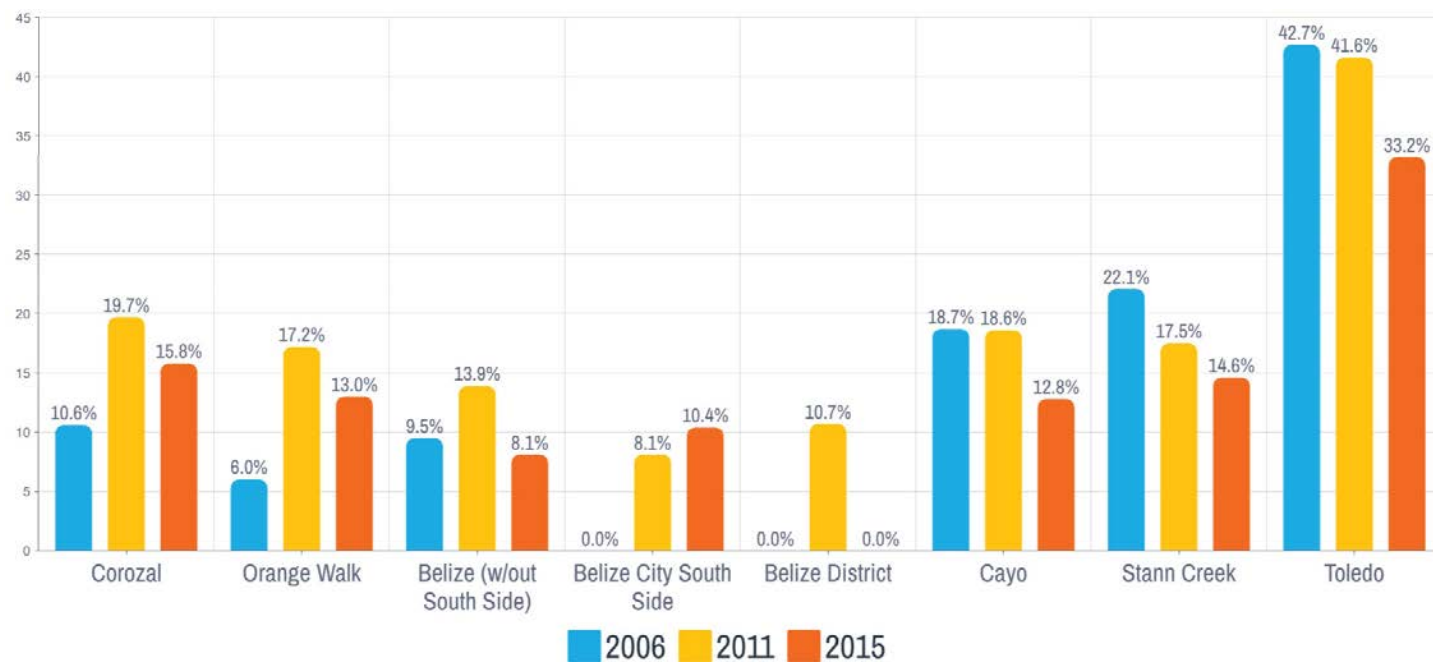
The prevalence of stunting in children exhibits similar patterns up to the age of 35 months between 2006 and 2015/2016. All three measurement points show a sharp increase in stunting prevalence after 6–11 months of age, peaking at 12–23 months and then levelling off slightly (see Figure 4).

Figure 4: Child stunting prevalence by age and over time (2006, 2011, 2015/2016)



An analysis of stunting by district in Belize shows that rates remained the highest in Toledo over the years, with approximately every second child stunted in the district (from 2006 to 2015/2016) (see Figure 5). In rural areas, the prevalence of stunting is higher than in urban areas (see Annex 5.3, Figure 20).

Figure 5: Child stunting prevalence by district and over time (2006, 2011, 2015/2016)



For further data on stunting see Annex 5.3, Figures 17–20. For In data on the prevalence of stunting (height-for-age-2 to -3 SD below average) disaggregated by gender, district, area (urban/rural), age, mother's education, and wealth index see Annex 5.3, Table 32. For data on wasting and underweight (acute and chronic malnutrition) see Annex 5.3, Figure 21 and Table 27.

OBJECTIVE 2: PREDICTORS OF APPROPRIATE/INAPPROPRIATE FEEDING PRACTICES AND STUNTING

KEY FINDINGS

- Urban or rural area is a significant predictor of exclusive breastfeeding: mothers in urban areas breastfed less than in rural areas.
- Differences in exclusive breastfeeding between rural and urban areas have increased over the years.
- Children's Body Mass Index (BMI) was significantly associated with exclusive breastfeeding for children in the 2011 survey, but not in 2015/2016.
- Differences in exclusive breastfeeding by gender tend to decrease over time.
- In 2006, area (rural/urban) and underweight were significant predictors of stunting.
- In 2011, less educated mothers, poorer families, lower BMI and underweight were significant predictors of stunting.
- In 2015, exclusive breastfeeding and area (rural/urban) were significant predictors of stunting.
- Stunting is significantly negatively associated with exclusive breastfeeding, but only in 2015.

FACTORS ASSOCIATED WITH EXCLUSIVE BREASTFEEDING FOR THE FIRST SIX MONTHS OVER TIME

A correlation analysis (see Table 4) for the 2006 survey reveals significant associations between exclusive breastfeeding and the gender of the baby ($r=0.227^*$), indicating that female babies were more likely to be exclusively breastfed than males¹, and total number of children under five in the household (negative relationship), meaning that babies in households with fewer young children were more likely to be exclusively breastfed than in households with more children under five ($r=0.237^*$).

In 2011, the correlation analysis shows significant negative relationships between exclusive breastfeeding and wealth index, indicating that mothers from poorer households ($r=-0.202^*$) were more likely to exclusively breastfeed their babies; and with children's BMI ($r=0.227^{**}$), indicating that for children who were exclusively breastfed for the first six months, the BMI was more likely to be within the normal range in line with WHO.

In 2015/2016, the correlation analysis shows a significant negative relationship between exclusive breastfeeding

¹ This result can only be shown for 2006 and contradicts to other results. Later MICS reports do not show this gender difference. Therefore, it is not considered necessary to follow this line of inquiry further.

and area (urban/ rural) ($r=0.161^*$), indicating that urban mothers breastfed less than rural mothers.

In summary, the correlation analysis reveals that no indicators are consistently associated with exclusive breastfeeding over the years (2006, 2011, 2015/2016).

Table 4: Correlations of exclusive breastfeeding of children aged 0–5 months, with key indicators

| VARIABLE | 2006 | 2011 | 2015/2016 |
|---|---------|---------|-----------|
| Number of children aged 0–5 months | N=88 | N=145 | N=189 |
| Gender of baby (male/female) | 0.227* | 0.114 | 0.095 |
| Area (urban/rural) | -0.135 | 0.094 | 0.161* |
| Total children under five years | -0.237* | N/A | N/A |
| Wealth index score | 0.011 | -0.202* | -0.014 |
| Mother's education level | -0.093 | -0.095 | 0.099 |
| Number of household members | -0.096 | N/A | N/A |
| BMI flag WHO (Scale: 0 = no flag, 1 = flag) | N/A | 0.227** | 0.038 |

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$. Spearman correlations. (*) EBF05 (exclusive breastfeeding of children 0–5 months): 2006 N=59; 2011 N=141; 2015 N=177.

FACTORS ASSOCIATED WITH STUNTING OVER TIME

The correlation analysis of key indicators (see Table 5) shows that certain significant associations are consistent over the years: area, wealth index, mother's education and underweight. Babies from rural areas, less wealthy families, mothers with lower education levels and infants who are underweight are more likely to be stunted.



Table 5: Correlations of stunting (percentage of height-for-age below -2 SD) of children under five, with key indicators

| VARIABLE | 2006 | 2011 | 2015/2016 |
|---|----------|----------|-----------|
| Number of children | N=403 | N=2089 | N=2578 |
| EBF05* | -0.092 | -0.041 | -0.159* |
| Gender of baby (male/female) | 0.031 | 0.014 | -0.039* |
| Area (urban/rural) | 0.169** | 0.075** | 0.101** |
| Total children under five years | 0.055 | N/A | N/A |
| Wealth index score | -0.176** | -0.266** | -0.208** |
| Mother's education level | -0.159** | -0.206** | -0.041* |
| Number of household members | 0.055 | N/A | N/A |
| BMI flag WHO (Scale: 0 =no flag, 1 = flag) | N/A | 0.118** | -0.034 |
| Acute and chronic malnutrition: underweight (weight-for-age: % below -2 SD) | 0.299** | 0.304** | 0.332** |
| Wasting (weight-for-height: % below -2 SD) | -0.004 | -0.018 | -0.03 |

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$. Spearman correlations. (*) EBF05 (exclusive breastfeeding of children 0–5 months): 2006 N=59; 2011 N=141; 2015 N=177.

PREDICTORS OF EXCLUSIVE BREASTFEEDING AND STUNTING OVER TIME

Only key indicators that significantly correlate with exclusive breastfeeding were included in a logistic regression analysis to determine the predictors of exclusive breastfeeding for all three MICS (2006, 2011 and 2015/2016). No significant predictors emerged for the 2006 survey, while BMI was the only significant predictor ($p=0.004^{**}$) for the 2011 survey. For 2015/2016, area (rural/urban) was the only significant predictor ($p=0.031^*$).

A second logistic regression analysis sought to determine the predictors of stunting (height-for-age: percentage below -2 SD) for all three MICS, including key indicators that significantly correlate with stunting.

Area (rural/urban) ($p=0.066^*$) and underweight ($p=0.000^{***}$) were significant predictors for stunting in 2006. Wealth Index score ($p=0.000^{***}$), mother's education level ($p=0.000^{***}$), BMI ($p=0.000^{***}$), and underweight ($p=0.000^{***}$) were significant predictors for stunting in 2011. Exclusive breastfeeding ($p=0.044^*$) and area (rural/urban) ($p=0.049^*$) were significant predictors for stunting in 2015/2016.

Logistic regression analysis thus revealed that there are no consistent predictors for exclusive breastfeeding or stunting over time. However, the findings of the descriptive and correlation analysis suggest that children in rural areas, from poorer families, with less educated mothers, are more likely to be stunted than children from urban areas, wealthier families or with more educated mothers – and even when they are more exclusively breastfed for the first six months of life.

OBJECTIVE 3: CHANGE OVER TIME

KEY FINDINGS

- There have been significant increases in exclusive breastfeeding and decreases in stunting over time.
- The reasons for these changes can be deduced from the results presented under objective 2.
- The implementation of BFHI is likely to have been a strong influence.

The analysis shows significant increases in self-reported exclusive breastfeeding over time (see Table 6).

Table 6: Changes in exclusive breastfeeding rates over time (2006, 2011, 2015/2016)

| VARIABLE | 2006 (T1) | | 2011 (T2) | | 2015/2016 (T3) | | CHANGE FROM T1 TO T2 | CHANGE FROM T2 TO T3 | CHANGE FROM T1 TO T3 |
|--------------|---------------|-----------|---------------|------------|----------------|------------|----------------------|----------------------|----------------------|
| | % | N | % | N | % | N | INCREASE | INCREASE | INCREASE |
| Male | 4.10% | 49 | 10.50% | 90 | 29.10% | 100 | 83.70% | 11.10% | 104.10% |
| Female | 17.60% | 40 | 21% | 58 | 37.70% | 89 | 45% | 53.50% | 122.50% |
| Total | 10.10% | 89 | 14.70% | 148 | 33.20% | 189 | 66.30% | 27.70% | 112.40% |

Significant declines in stunting were observed over time (see Table 7).

Table 7: Changes in stunting over time (2006, 2011, 2015/2016).

| VARIABLE | 2006 (T1) | | 2011 (T2) | | 2015/2016 (T3) | | CHANGE FROM T1 TO T2 | CHANGE FROM T2 TO T3 | CHANGE FROM T1 TO T3 |
|--------------|---------------|------------|---------------|-------------|----------------|-------------|----------------------|----------------------|----------------------|
| | % | N | % | N | % | N | INCREASE | DECREASE | DECREASE |
| Male | 17.60% | 321 | 18.60% | 896 | 16.20% | 1229 | 5.70% | 12.90% | 8% |
| Female | 17.60% | 352 | 20% | 872 | 13.70% | 1168 | 13.60% | 31.50% | 22.10% |
| Total | 17.60% | 673 | 19.30% | 1768 | 15% | 2397 | 9.70% | 22.30% | 14.80% |

OBJECTIVE 4: UNDERLYING MECHANISMS OF BREASTFEEDING: MEDIATORS

Mediation analyses were performed to investigate the underlying mechanisms of breastfeeding but produced no significant results and are not discussed further.

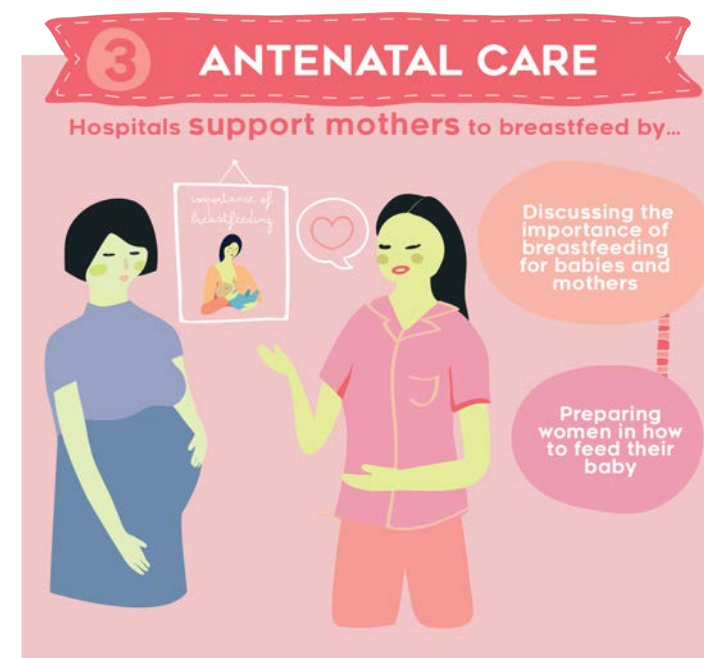
LIMITATIONS OF STUDY 1 AND PRACTICAL IMPLICATIONS

In the MICS, only demographics and contextual factors are used to identify key factors associated with exclusive breastfeeding, continued breastfeeding and complementary feeding, as well as stunting. Our previous research for UNICEF in Guinea Bissau suggests (Gamma et al., 2017) that in addition to demographics and contextual factors, psychosocial factors should be identified to explain behavioural outcomes and develop effective and sustainable behaviour change interventions (e.g. by using the Ranas behaviour change approach, see Annex 5.1; Mosler, 2012; Mosler & Contzen, 2016). A BabyWASH and Nutrition approach could be useful to implement more holistic interventions aiming to decrease stunting, as our research for the World Bank in Lao PDR shows (Slekiene et al., submitted for publication in 2022).

Breastfeeding requires effort, time and self-efficacy. For this reason, we suggest that well-being (mental health) factors into individual participation. There is evidence that impaired mental health can substantially impair daily activities in vulnerable caregivers (WHO, 2021; Slekiene & Mosler, 2018; 2019; 2021). Thus,

an analysis of mental health would yield additional insights into why women perform exclusive breastfeeding, continued breastfeeding and adequate complementary feeding. Such insights would improve the ability predict infant and young child feeding practices.

Demographic characteristics, genetics and psychosocial factors predicting feeding practices of children above 12 months of age should be assessed using a more holistic approach combining insights from psychology, public health, biology and medicine.



3.2. STUDY 2: QUALITATIVE ANALYSIS

Study 2 uses three concepts related to breastfeeding:

1. 'Exclusive breastfeeding' refers to feeding a child nothing other than breastmilk during the first six months of life. Many of the interviewees' babies were under six months of age, and if they were currently breastfed exclusively, were counted into the exclusive breastfeeding group. However, it was not specifically excluded whether they received water in addition to breastmilk. '
2. Breastfed' means whether a child was breastfed at all, independently of age. This does not only mean continued breastfeeding, and also includes children under six months of age who receive breastmilk and also other nutrition (e.g. food, purees, formula, etc.).
3. Breastfeeding right after birth means the mother started breastfeeding within one hour after giving birth.

CHILD AND BIRTH CONTEXT

KEY FINDINGS

- ★ Nurses play a very important role in the education and support of mothers.
- ★ All public hospitals are part of BFHI.
- ★ The public health system seems to be reaching the majority of mothers who give birth in Belize.
- ★ Breastfeeding right after birth is mostly determined by hospitals' policies and supportive actions.
- ★ The community health-care system delivered by the Health Education and Community Participation Bureau (HECOPAB) of the Ministry of Health and Wellness and community health workers is well established and far-reaching, and also provides health education.
- ★ Perceptions of transparency and the support given at hospitals could be improved.

Caregivers: Of the 33 women who gave birth, three did so in private clinics, one did not answer and the rest (29) gave birth in public hospitals. Six women had c-sections (19 per cent); the rest had natural births. In only four cases was someone present at birth apart from doctors and nurses (in four cases the father of the child, in two a midwife, in two another family member). This was mostly due to COVID-19 restrictions which did not allow more persons into the hospital.

Of the 26 mothers who talked about their birth experience, all but three (two because of complications, one because the mother was under the influence of alcohol while giving birth) the baby was returned to the mother within one hour (in 19 cases within a half hour; two mothers mentioned skin-to-skin contact). Breastfeeding was encouraged in all but the three cases with complications.

In four cases, the mother reported difficulties with milk production. One reported that she "had to" breastfeed.

Asked about the birth experience brought responses that ranged from painful, hard and difficult, to quite good. Surprisingly, and in contrast to the FGDs when mothers can be expected to exchange such stories), not one respondent reported being unhappy or dissatisfied with their treatment or how the birth had proceeded.

In five cases, the grandmother of the child was the primary caregiver (mostly while the mother was at work). The remaining 29 mothers who answered this question indicated themselves as the primary caregiver. Support was usually given by family members, mostly female relatives (the child's grandmothers, sisters, aunts). Only 1 of 37 mothers indicated that the child had any health issues.

KII: Key informants indicated that, to their knowledge, most women in Belize give birth in public hospitals/clinics (one specified that the rate was 96 per cent at hospital and 4 per cent at home). One key informant said that to her knowledge, the rate of c-sections is around 30 per cent. One person explained that, for most people, private hospitals are not affordable. Another said that there was a community health system available as well and that she thought that about 5 per cent of people were not attending the public health system at all.

All key informants agreed that the standard procedure after the birth of a baby is skin-to-skin contact with the mother and breastfeeding within one hour after birth, after initial health care is provided to mother and child, in line with BFHI guidelines. According to key informants, BFHI was introduced to Belize in 2006 and the first hospital was certified in 2008. By 2012, all public hospitals and some polyclinics in the country were certified.

FGD: One group of mothers discussed at length the lack of trust in government and the public health system. Discussants agreed that women do not feel supported, find that there is a lack of transparency. Almost all mothers in the group had had bad delivery and care experiences, and indicated that they had been treated badly by nurses. This discussants perceived the cost of certain hospital services and ambulances to be too high and found it unclear how these are calculated. Costs were also not explained in advance of procedures. They pointed to the lack of a feedback system through which their complaints and suggestions could be heard.



BREASTFEEDING

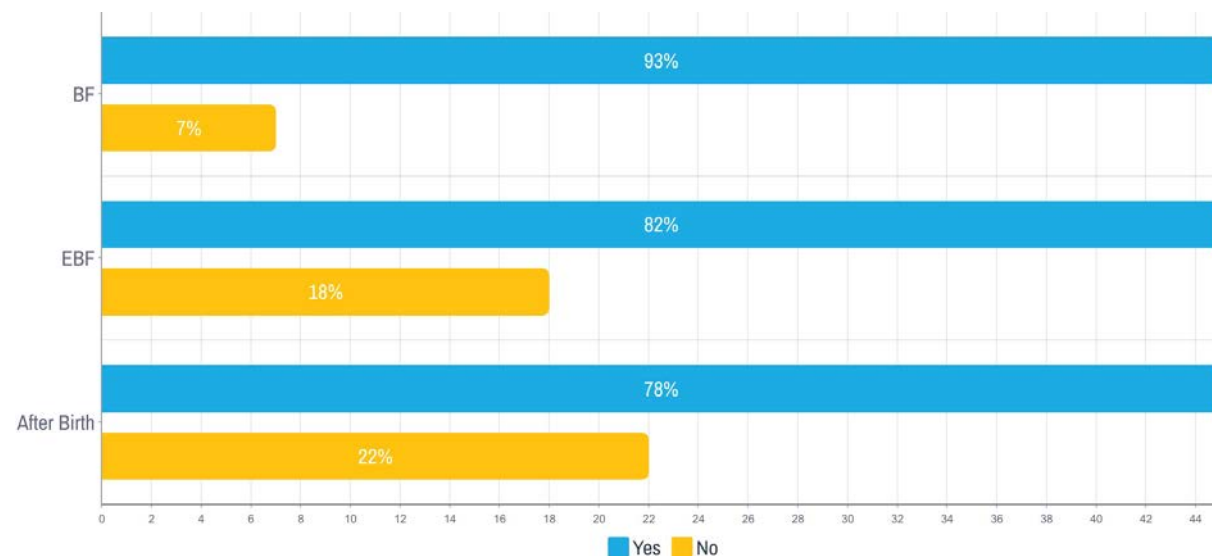
KEY FINDINGS

- General breastfeeding (of any type) generally is practiced more widely than exclusive breastfeeding and both are more common than breastfeeding right after birth.
- When asked directly, most people do not think that the gender of the baby has an influence on breastfeeding practices. Some suggested that boys need more milk and are rougher, while girls motivate protective feelings.
- More children in the household can have a positive (e.g. support, good prior experiences with breastfeeding) or negative (e.g. more stress, less time, negative experiences) impacts on breastfeeding.
- Key arguments for and benefits of breastfeeding are: a healthy baby; better development of the baby; breastmilk is better (e.g. digestion, comfort, natural, nutritious); it is cheaper than the alternatives; it creates love and connection; it is better for the mother.
- The most important arguments against and reasons not to breastfeeding are: work; when the mother is sick; lack of support; affected breasts; the mother's mental health; milk issues.
- Suggested areas of improvement are: more supportive workplaces; more promotion of breastfeeding; more social acceptance; more professionals working in breastfeeding.

Caregivers: Unsurprisingly, the rate of reported general breastfeeding (including both exclusive breastfeeding and breastfeeding with complementary feeding) is highest (see Figure 6 and Annex 5.3, Table 33). Twenty-eight respondents said they breastfed right after birth, 37 had or were currently breastfeeding exclusively (see Annex 5.3, Table 33). Giving babies water to drink seems to be common and mothers who did so considered themselves to be exclusively breastfeeding.

More children were exclusively breastfed than those who were breastfed within one hour of birth (see Figure 6).

Figure 6: General breastfeeding, exclusive breastfeeding under six months of age and breastfeeding right after birth



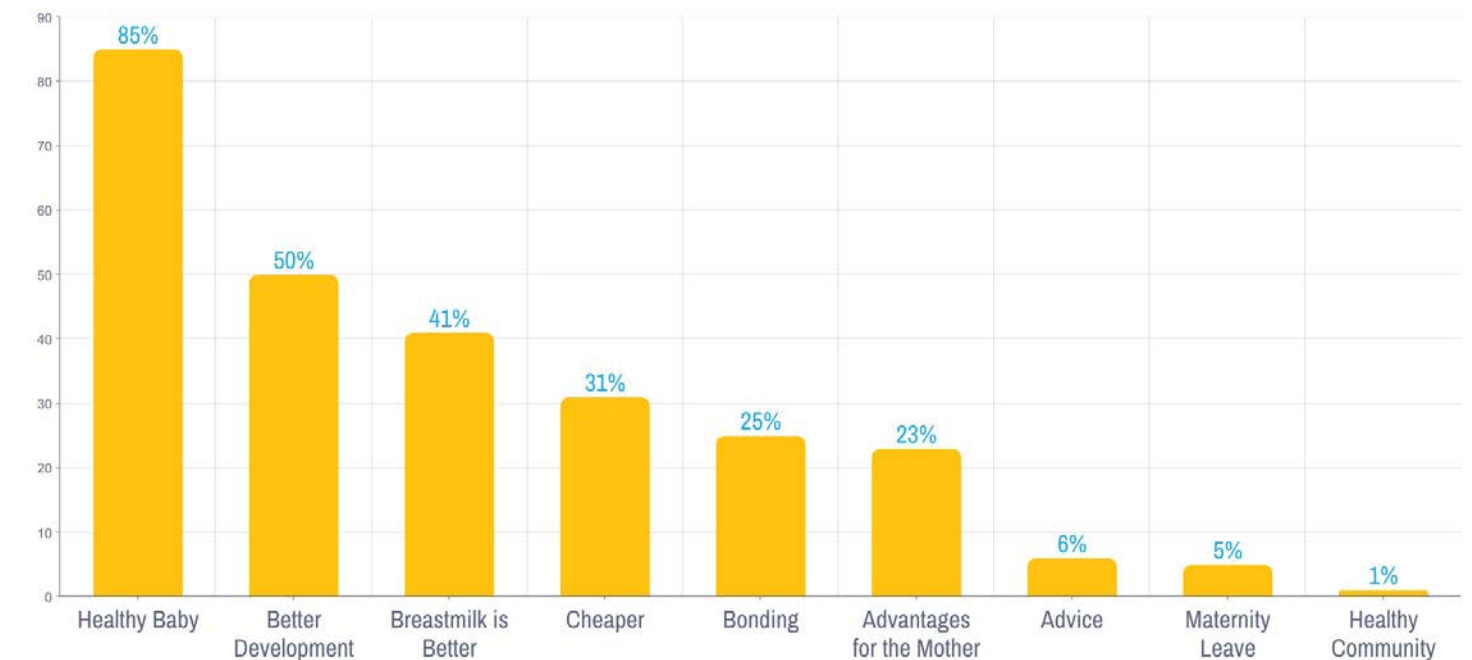
When asked if gender influenced whether and how much a baby was breastfed, all but three responded in the negative. The three who replied in the positive said:

- boys have more difficulties latching
- boys suckle harder and more
- boys should not be breastfed for more than one year; thereafter, breastmilk has toxins and is bad for boys, while girls shed the toxins with their period

When asked whether the number of children influenced current breastfeeding, respondents said that the main factor was the prior experience of breastfeeding. Negative experiences motivated the mother to do something differently (e.g. be less stressed with the second child, or not breastfeed because the prior experience was too intense), while positive experiences were a motivation to breastfeed the child.

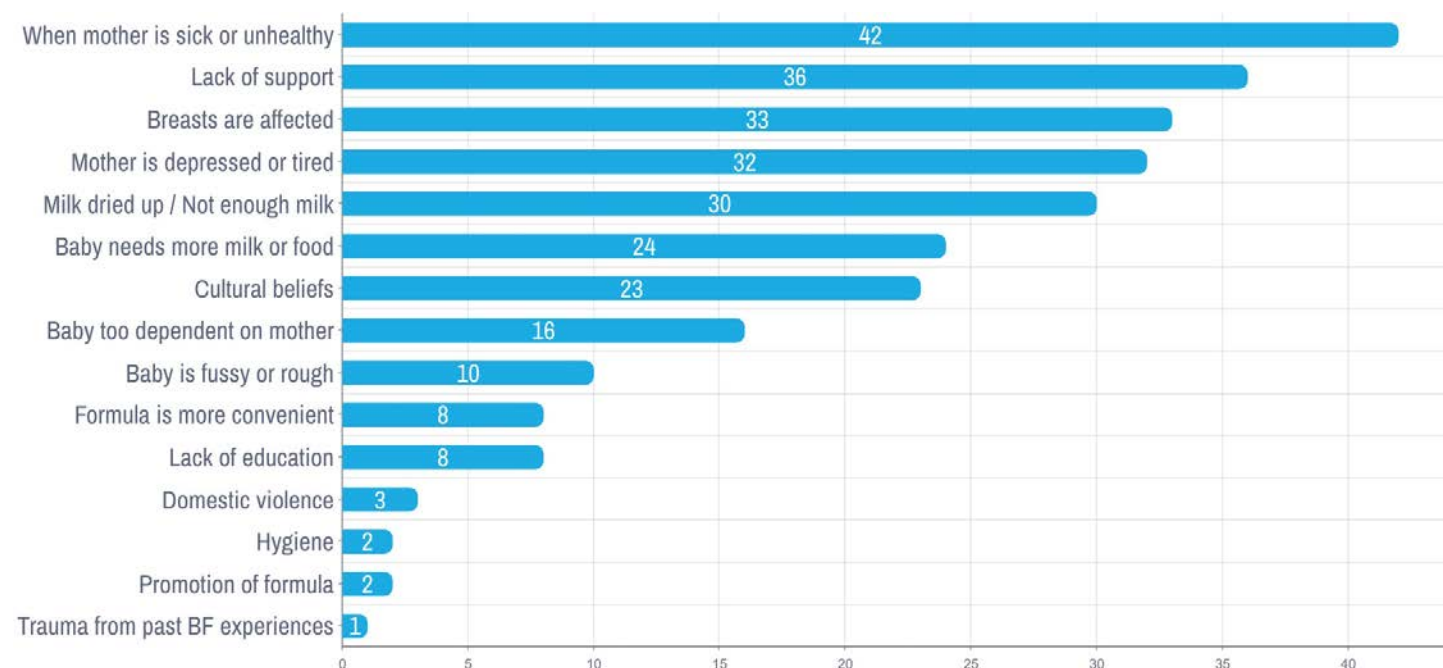
The most commonly stated reasons for and benefits of breastfeeding were to have a healthy baby and that the baby develops better (see Figure 7 and Annex 5.3, Table 34).

Figure 7: Reasons for and benefits of breastfeeding, provided by caregivers, key informants and FGDs



When asked about reasons to stop breastfeeding or to not breastfeed, and the possible negative health consequences and disadvantages or costs of breastfeeding, the most commonly named categories were work, when the mother is sick or unhealthy and lack of support (see Figure 8 and Annex 5.3, Table 35).

Figure 8: Reasons against and disadvantages of breastfeeding, provided by caregivers, key informants and FGDs



When asked if they would do anything differently about breastfeeding, 12 women said that they would not breastfeed, six that they would have liked to breastfeed more and longer and three that they would rather work or breastfeed less (i.e. use more formula). The rest did not answer this question.

KII: Key informants estimated that 35 per cent of women in Belize practice exclusive breastfeeding, and that they do so for about five months, while overall breastfeeding lasts for about one year. When asked what they would change about breastfeeding in Belize they identified factors in a number of categories, with multiple answers possible (see Table 8).

Table 8: Factors that key informants would change about breastfeeding in Belize

| RESPONSE (GROUPED INTO CATEGORIES) | FREQUENCY OF MENTIONS |
|--|-----------------------|
| Offices and workplaces to support or at least allow breastfeeding, provide a clean and secure area for breastfeeding (also in public places) or pumping, and give the time necessary for the first two years of a child's life, and for policies to exist which protect those rights | 7 |
| Increased promotion: help women understand the importance of breastfeeding and increase awareness of breastfeeding and its benefits for community, family, mother and child | 5 |
| Change misconceptions and stigma, increase social acceptance | 2 |
| More health workers and nurses in maternity wards, more breastfeeding trainers, consultants, educators and promoters nationwide | 2 |
| Reach villages with less coverage across the country | 1 |
| A breastmilk bank in Belize to support mothers who are unable to breastfeed or exclusively breastfeed | 1 |
| Start breastfeeding education and promotion earlier, even at primary school level, to reach early dropouts, who are more likely to have children early | 1 |
| Improve training on breastfeeding promotion during nurse's training (not just information and less focused on technical terms; rework the manual) | 1 |
| More support for women (who bear most caregiving responsibilities for children, elderly and the sick) and involve men more | 1 |

FGD: When asked how the baby's gender influences breastfeeding, discussants indicated:

- boys drink more and are rougher (it is more tiring; the mother might not have enough breastmilk)
- boys are more likely to be delivered via c-section and the antibiotics make the milk go dry
- girls sleep more and cry less (it is easier to breastfeed them)
- girls are more fragile and the urge to protect them is greater

COMPLEMENTARY FEEDING AND STUNTING

KEY FINDINGS

- ★ Of the eight food groups recommended by WHO, the most frequently used groups for complementary feeding are group 1 (grains, roots and tubers) and 6 (vitamin-A rich fruits and vegetables).
- ★ Other than those food groups, babies are also commonly fed formula and adult food.
- ★ Drinking water given to babies is mostly purchased bottled water.
- ★ According to caregivers, good nutrition, breastfeeding, love and attention, good care, hygiene and medical care are the most important factors for their baby's growth.
- ★ The most commonly given reasons for stunting are insufficient nutrition, inadequate care, poverty and when the mother does not take care of herself.
- ★ According to key informants issues with complementary feeding include bad food choices for the child (e.g. junk food), negative experiences with inadequate food and starting complementary feeding too late.
- ★ Key Informants recommend more education on stunting and nutrition, more breastfeeding promotion, and better nutrition during pregnancy, lactation and complementary feeding.

The World Health Organization (2008) recommends that, for adequate nutrition, children aged 6–23 months consume foods from at least four food groups (out of seven) every day (see Table 9). Additionally, breastfeeding is considered the eighth food group but is analysed separately. Pre-lacteal feeding was not observed in this qualitative study.

Caregivers: Grains, roots and tubers, and then Vitamin A-rich fruits and vegetables, were most frequently named by caregivers (see Table 9) as complementary foods provided to babies.

Table 9: WHO food groups for complementary feeding, identified by caregivers, key informants and FGDs

| FOOD GROUP | CAREGIVERS (TIMES MENTIONED) | KEY INFORMANTS (ESTIMATES) | FGDS (MENTIONED BY GROUP) |
|--|------------------------------|----------------------------|---------------------------|
| Group 1: Grains, roots, and tubers (here: potatoes, bread, pasta, rice, tortilla, rice, cereals, porridge, sweet potato, calabash) | 73 | 7 | 2 |
| Group 2: Legumes and nuts (here: beans) | 9 | 0 | 1 |
| Group 3: Dairy products (here: milk, cream) | 2 | 3 | 1 |
| Group 4: Flesh foods (here: meat, fish) | 7 | 1 | 1 |
| Group 5: Eggs | 2 | 0 | 0 |
| Group 6: Vitamin A-rich fruits and vegetables (here: carrots, pumpkin, broccoli, peppers, cauliflower) | 25 | 2 | 2 |
| Group 7: Other fruits and vegetables (here: corn, banana, coconut) | 8 | 1 | 2 |

Note: multiple answers per respondent possible; question asked in two FGDs.

Of foods that fall outside the categories listed above, caregivers most frequently identified infant formula as a complementary food provided to babies (see Table 10).

When food or breastmilk substitute was prepared with water, or water was given to the child directly, purchased (commonly called “purified”) water was mentioned in all cases except one, in which the mother indicated that she boiled water and let it cool down before use.

Table 10: Other foods provided as part of complementary feeding, identified by caregivers, key informants and FGDs

| FOODS | CAREGIVERS (TIMES IDENTIFIED) | KEY INFORMANTS (ESTIMATES) | IDENTIFIED IN FGDs |
|--|-------------------------------|----------------------------|--------------------|
| Formula | 30 | 8 | 1 |
| What the adults eat | 9 | 3 | 0 |
| Liquids (juice, water with sugar or honey, water) | 4 | 7 | 1 |
| Chips, biscuits, soft drinks and other junk foods | 1 | 1 | 0 |
| Prolonged exclusive breastfeeding (longer than six months) | 0 | 1 | 0 |
| Bones | 0 | 1 | 0 |

Caregivers were asked what they thought were the main influences on healthy growth for babies, and what they did to prevent stunting in their child. The most frequent influences on healthy growth were in the categories of good nutrition and breastfeeding. These were also the most frequent responses to the question on measures to prevent stunting, though breastfeeding was much less frequently mentioned as a measure to prevent stunting compared to the first question on influences on healthy growth (see Table 11).

Table 11: Influences on healthy growth for babies and measures to prevent stunting, identified by caregivers

| RESPONSE (GROUPED INTO CATEGORIES) | INFLUENCES ON HEALTHY GROWTH | MEASURES TO PREVENT STUNTING |
|--|------------------------------|------------------------------|
| Good nutrition: For mother and baby to eat healthy, vitamins | 30 | 28 |
| Breastfeeding, breastmilk | 25 | 12 |
| Love and attention, play, contact, stimulation | 15 | 9 |
| Care: Keep them dry, clean, good sleep | 13 | 10 |
| Hygiene | 9 | 6 |
| Vaccinations and doctor appointments / listening to the doctor | 5 | 5 |
| Healthy mother (mentally and physically), taking care of her(self) | 1 | 8 |
| Formula | 1 | 3 |
| Does not know | 1 | 2 |

Note: multiple answers were possible, responses grouped into categories.

Caregivers were asked to identify causes of stunting. Responses most frequently fell into the category of 'Insufficient nutrition, malnutrition, lack of vitamins and/or minerals' (see Table 12).

Table 12: Reasons for stunting, identified by caregivers

| RESPONSE (GROUPED INTO CATEGORIES) | FREQUENCY |
|--|-----------|
| Insufficient nutrition, malnutrition, lack of vitamins and/or minerals | 29 |
| Inadequate care, does not sleep well | 14 |
| The mother does not take care of herself (not eating healthy, not taking vitamins, stress) | 8 |
| Not enough or no breastmilk | 7 |
| Sickness (problems with immune system, born ill, low defences) | 7 |
| Not enough attention or support to their development, bad family life | 5 |
| Insufficient hygiene | 3 |
| Does not know | 3 |
| Just bottle feeding and nothing else | 2 |
| Insufficient medical care | 1 |
| Too much technology | 1 |

Note: multiple answers were possible and responses are grouped into categories.

KII: Key informants identified baby food choices and negative experiences of the baby with inadequate or inappropriate food as possible issues with complementary feeding (see Table 13). All key informants agreed that stunting can be caused by a lack of breastfeeding and not giving the proper substitutional and complementary food.

To prevent stunting, key informants recommended better education on complementary feeding (on local nutritious foods, when and how much of what to give, providing options of early meals), as well as adequate nutrition during pregnancy, lactation and once complementary feeding is introduced. Breastfeeding and exclusive breastfeeding should be promoted and protected on all levels and mothers should be supported in breastfeeding and proper nutrition. They also recommended that it should be made clear that exclusive breastfeeding should be practiced for the first six months and then complementary foods introduced alongside continued breastfeeding.



Table 13: Possible issues with complementary feeding, identified by key informants

| RESPONSES (GROUPED INTO CATEGORIES) | FREQUENCY |
|---|-----------|
| Bad food choices (e.g. white bread, coffee, soft drinks, junk food, fast food, added sugar, cow milk) and not knowing what to feed | 7 |
| Negative experiences for the baby with inadequate food (adult food, too big, not the right kind, too hard, painful to swallow, start too early) | 6 |
| Starting complementary feeding too late (e.g. still exclusive breastfeeding at one year of age) | 4 |
| Not giving enough complementary food | 3 |
| Caregivers are not educated on complementary feeding/ misinformation | 2 |
| Availability of foods, affordability of foods and formula | 2 |
| Bad hygiene | 1 |
| Cultural influences | 1 |

Note: multiple answers were possible and responses are grouped into categories.

FGDs: FGD participants stated that for healthy growth a baby needs healthy food, a healthy mother, hygiene, love and nurturing care, breastmilk and clinical care. In their view, the main reasons for stunting are:

- nutrition (mothers only give the children breastmilk, no other foods; malnutrition; complementary feeding issues, e.g. babies are chunky, but not tall / babies are given junk food and sodas / laziness to provide better food / child does not like the taste of the food and the mother stops trying)
- poverty (nutritious food and supplements are too expensive; vitamins are not available; hospital visits are too expensive or the transport to get there is expensive)
- sickness; hereditary or genetic issues; premature birth
- interaction (social upbringing); culture
- concerns about digestion
- lack of education
- lack of self-care by the mother
- mental health (social problems, problems in the family, emotional problems, not wanting the baby, not taking care of the baby);
- availability of early prenatal care and information at hospitals (some mothers do not go to hospital; the information is focused on breastfeeding not complementary feeding, information in Spanish is unavailable)

PSYCHOSOCIAL FACTORS AND BARRIERS

KEY FINDINGS

- ★ Breastfeeding right after birth is strongly connected to the added information received.
- ★ How long exclusive breastfeeding and breastfeeding are practiced is negatively correlated to severity: if not breastfeeding a baby is not considered very bad, the longer the duration of exclusive breastfeeding and overall breastfeeding.
- ★ How long breastfeeding and exclusive breastfeeding are practiced is positively correlated to age (older mothers breastfeed for more months).
- ★ Mothers who can name barriers to breastfeeding generally practice breastfeeding for shorter periods.
- ★ Mothers often experience the following challenges with breastfeeding and require support: positioning the baby, latching, how to hold the breast correctly, how to stimulate milk production, how to protect and take care of nipples and breasts during lactation.
- ★ The most frequently identified barriers to breastfeeding are: work, physical and health problems, breastfeeding issues (e.g. not having enough milk, not being able to breastfeed or baby still hungry after breastfeeding) and lack of support.
- ★ Important sources of information are female relatives (mothers, grandmothers, sisters), nurses, health facilities, media (books, internet, social media) and education.



Caregivers: Correlation analysis (Pearson) revealed significant associations between different breastfeeding indicators (breastfeeding right after birth, duration of exclusive breastfeeding, duration of overall breastfeeding) and the psychosocial factors of severity, barriers, added information and the demographic factor of age for caregivers (see Table 14). Other assessed psychosocial factors (vulnerability, attitudes, norms, confidence, action knowledge and self-regulation) do not show statistically significant correlations with the breastfeeding indicators.

Older mothers are more likely to practise exclusive breastfeeding and to breastfeed for longer. Receiving additional information is associated with initiating breastfeeding within one hour of birth, as it makes mothers more aware about the benefits of breastfeeding. Mothers who are aware of barriers or problems related to breastfeeding typically breastfeed for fewer months, compared to mothers who are not aware of barriers. Surprisingly, the perception that not breastfeeding may be bad for the baby is negatively correlated with breastfeeding and such women are less likely to breastfeed or to breastfeed for less time.

Table 14: Significant correlations between breastfeeding indicators and psychosocial and demographic factors

| PSYCHOSOCIAL FACTORS | BREASTFEEDING WITHIN ONE HOUR OF BIRTH | EXCLUSIVE BREASTFEEDING (IN MONTHS) | OVERALL BREASTFEEDING (IN MONTHS) |
|---|--|-------------------------------------|-----------------------------------|
| SEVERITY | | | |
| How bad would it be if a baby does not get breastfed? Answer options: from 1 = not bad at all to 5 = very bad | | -0.367* | -0.409* |
| BARRIERS | | | |
| What barriers or problems could a woman face that would make her stop breastfeeding or not breastfeed at all? Answers: 0 = no barrier named, 1 = barrier named) | | | -0.485** |
| INFLUENCE OF ADDED INFORMATION | | | |
| Did the information you additionally received change influence you in some way in your breastfeeding? Answers: 0 = no, 1 = yes | 0.505* | | |
| Age | | 0.559** | 0.514** |

Note: Only statistically significant correlations (Pearson's r, p < 0.05) are displayed. * p < 0.05, ** p < 0.01

Caregivers were asked if there was anything about breastfeeding that they did not know how to do. Of the 37 women who answered the question, 13 responded "no". Of the remainder, the most frequent responses related to positioning the baby and latching (see Table 15).

Table 15: Gaps in breastfeeding knowledge prior to facing it, provided by caregivers and key informants

| GAP | CAREGIVERS (TIMES NAMED) | KEY INFORMANTS (TIMES NAMED) |
|--|--------------------------|------------------------------|
| Positioning of the baby | 8 | 1 |
| Latching | 7 | 7 |
| How to hold the breast and not cover the baby's nose | 4 | |
| How to breastfeed in general | 4 | |
| Massaging the breast to increase milk production / how to stimulate production / what to do when there is not enough milk (right away) | 3 | 3 |
| How to take care of the breast / when it bleeds, blisters or opens / in case of infections (mastitis) | 3 | 2 |
| How to protect the nipples, avoid blisters, what to do when nipples are inverted | 2 | 1 |
| Burping | 2 | |

| | |
|---|---|
| Pumping | 1 |
| Complete emptying of the breasts | 1 |
| Hygiene | 1 |
| Complementary feeding and nutrition of mother and child | 1 |
| Self-care of the mother | 1 |

Note: multiple responses were possible.

The interviews with mothers revealed possible barriers related to breastfeeding, of which the most frequently mentioned were work and physical or health issues (see Table 16).

Table 16: Barriers to breastfeeding, provided by caregivers and key informants

| BARRIER | CAREGIVERS (TIMES IDENTIFIED) | KEY INFORMANTS (TIMES IDENTIFIED) |
|---|-------------------------------|-----------------------------------|
| Work | 11 | 3 |
| Physical problems / health issues / having to take medicine / unhealthy lifestyle (smoking / alcohol) | 10 | 3 |
| Not being able to breastfeed/ milk dries up / no or not enough milk (baby still hungry after breastfeeding) | 7 | 1 |
| Not enough information/ education (e.g. about positioning, how to increase breastmilk production, on nutrition, on complementary feeding, on extracting breastmilk and storing) | 2 | 4 |
| Lack of support (from family, work, from men) | 1 | 5 |
| Pumping not allowed (at work) or no space | 3 | 2 |
| Baby bites, painful nipples, hurting breasts, mastitis | 1 | 3 |
| Stress / bad mental health / negative attitude | 3 | |
| The baby not wanting the breast, not latching, not tolerating or wanting the milk | 3 | |
| Myths, beliefs (sagging breasts, not enough breastmilk) and culture | 1 | 2 |
| Blisters and painful breasts | 2 | |
| Other: Sleepless nights, mother loses too much weight, some people do not believe in breastfeeding, so that the child does not depend on the mother, age, fear of infection (COVID), bottle-feeding is more practical | 1 | |

Note: multiple responses were possible.

All but two of the responding mothers indicated that they were influenced by the information they received through identified communication channels (see Table 17). The most important source of information and influence for mothers are their own mothers and grandmothers and, to a lesser extent, sisters. Almost as important is information from nurses, followed by doctors or hospitals/clinics. Books, the internet and social media are also consulted.

KII: Key informants paint a similar picture, with additional emphasis on family and friends.

Table 17: Most used communication channels about breastfeeding, identified by caregivers and key informants

| COMMUNICATION CHANNEL | CAREGIVERS (TIMES IDENTIFIED) | KEY INFORMANTS (TIMES IDENTIFIED) |
|--|-------------------------------|-----------------------------------|
| Mother/ grandmother | 23 | 6 |
| Nurses | 18 | 4 |
| Clinic/ hospital / doctors | 8 | 3 |
| Sister(s)/ family | 6 | 3 |
| Books, internet, google, social media | 6 | |
| Other: education (at school, university), elderly, midwife, nutritionist, other mothers or experienced women, friends or peers | 1 | 6 |

Note: multiple responses were possible.

Caregivers: Mothers provided a number of anecdotal stories about the barriers they experienced and their recommendations were:

- She is scared because one of her friends had a nipple infection. She will be careful as one of her friends had a premature baby and did not have milk until five days later and then gave up on breastfeeding.
- Her baby is six months old, and the nurses have not told her much about breastfeeding.
- She had to bottle-feed her first child because the baby did not want the breast and would throw up after breastfeeding.
- She is worried that she might have postpartum depression or anxiety.
- Her baby was crying a lot, had trouble latching and still seemed hungry after breastfeeding. That is why she supplements with infant formula.
- She did not know about pumping and would have done that with her son. She has a longer than usual maternity leave and will try to stay home until the baby is one year old; if not, she will give the baby pumped milk in a sippy cup. She thinks breastfeeding is not promoted enough in Belize, her hospital does not have information or meetings about it.
- Her work did not allow her to pump; she thinks that some babies do not take or want the breast.
- Eight years ago, in Corozal, they only promoted skin-to-skin contact but did not give information about breastfeeding. She exclusively breastfed her daughter and, when she had to go back to work, the baby

would not take the bottle, even with breastmilk. Pumping was messy at work; mothers should be better informed, also about how to increase milk production. There should be exchange between mothers and their more experienced peers.

- She gave birth at a private hospital, and they were not as good at practical care. In the public hospital, they are more proactive and show exactly how to do it. Complementary feeding is an important topic but not much information is given about it. They actually had stunting problems when their child was a year and a half. They were prescribed vitamins and medicine to increase the child's appetite. The baby wanted breastmilk more than food; the medicine helped and also that they were giving him more and varied foods and cut it in small pieces so that it would be easier to eat.
- Some women are too lazy to breastfeed or they do not want to have to take out their breasts.

BABY-FRIENDLY HOSPITAL INITIATIVE

KEY FINDINGS

- ★ While most (89 per cent) mothers are unfamiliar with BFHI, almost an equal proportion (82 per cent) confirm they have received information through the initiative.
- ★ Recipients of information through BFHI have strongly positive views about its importance and usefulness.
- ★ Nurses provide practical knowledge, information and instructions and, to a lesser extent, promote breastfeeding.
- ★ Apart from nurses and through posters and pamphlets at hospitals and clinics, mothers mostly receive information from family and friends or social media.
- ★ Key informants are almost all familiar with BFHI and have a highly positive opinion of the initiative.
- ★ According to key informants, BFHI could be further improved by extending it to the private sector, creating support groups with experienced mothers, and increasing involvement, education, support and promotion.
- ★ HECOPAB, mobile clinics and community health workers build a strong network for health care in communities.

Caregivers: About 89 per cent of caregivers were not familiar with BFHI, but after being provided an explanation, 82 per cent confirmed to have received information this way. The recipients of this information indicated to have liked what they were told, with $m=3.7$ out of 5 (3: medium-liked, 4: liked). Of these, 73 per cent also said that the information they received from nurses, doctors and at the hospital or clinic influenced them in their decision to breastfeed or how they breastfeed. About 62 per cent received information (also) another way (for example by posters or pamphlets at the clinics, see below) and of those persons, 82 per cent indicated that this additional / differently received information influenced them in their decision to breastfeed or how they were breastfeeding.

The women who appreciated the information they received through BFHI stated that it was good information, that they were shown what exactly to do, that it helped, was explained well, was important, and that it was useful

when they did not know what to do or how to do it. The women who did not like the information said that it was not convincing, that it was disappointing when they did not receive enough information, and that they felt almost forced to breastfeed.

Most of the information received was instructional and practical, on how to breastfeed and how to prepare for breastfeeding. General information about breastfeeding was also given to many respondents. Breastfeeding promotion was a less common answer (see Table 18).

Table 18: Information received by mothers as part of BFHI, provided by caregivers

| HOW INFORMATION WAS RECEIVED | TIMES MENTIONED |
|--|-----------------|
| Told, explained or showed how to do it (position, latching, stimulation, prep nipples, massages), helped, gave instructions, showed hands-on, were supportive | 19 |
| Talked about breastfeeding (generally)/ gave information/ explained | 14 |
| Breastfeeding promotion: breastfeeding is important, better, explained benefits, healthy for the baby, prevents sickness | 7 |
| Did not receive information via the Baby Friendly Hospital Initiative or does not remember | 7 |
| Once each: To breastfeed as often as possible, to come for breast check-ups, to relax and take care of herself, that she has to breastfeed, that bottles are not allowed | 1 |

Note: multiple responses were possible.

All respondents confirmed having received information from nurses. None mentioned receiving BFHI information from a doctor. Pamphlets, presentations in the prenatal check-up waiting room and books were mentioned by three respondents.

Apart from the nurses, respondents indicated they had received information from posters (named eight times), from pamphlets (eight), from the social network (family, friends, etc., five), through the internet (three) and from education channels such as classes about breastfeeding or nursing training (two).

KII: Only 1 of 11 key informants indicated they had not heard about BFHI, while one informant did not answer the question. Thus, 9 of 11 key informants knew of the initiative and were involved in it (e.g. in management, implementation, monitoring, training, certification, assisting or supporting). Key informants rated the initiative as wonderful, as improving breastfeeding and communication, stated that it is very good for promotion of breastfeeding, that it should be adopted in all health facilities and awareness should be spread outside facilities. Their suggestions of ways to improve BFHI are provided in Table 19.

Table 19: Views of key informants on how BFHI could be improved

| SUGGESTIONS | TIMES MENTIONED |
|---|-----------------|
| Extend to private sector and every health-care facility | 3 |
| Experienced women to advise new mothers/ support groups | 3 |
| More involvement at community level (e.g. one breastfeeding counsellor per community) | 2 |
| The general public should be educated (public awareness, via TV and radio) | 2 |
| Focus on promotion of breastfeeding, not just education and instruction | 2 |
| Men should be more involved and educated (e.g. about gender roles and how to take over their share in caretaking) | 2 |
| Continued educational courses for health professionals | 1 |
| Doctors should promote breastfeeding too (not just nurses) | 1 |
| Information and education about stunting and nutrition | 1 |
| Education about family planning and birth control | 1 |
| Women empowerment | 1 |
| More lactation support, e.g. by hotlines and professionals just for that kind of support | 1 |
| Focus on well-being and mental health of the mothers and how to detect and support it | 1 |
| Nurses are overworked, more personnel is necessary | 1 |
| Educational material needs to be available in Spanish | 1 |

Note: multiple responses were possible.

Four key informants thought that BFHI influences mothers to do something differently when it comes to breastfeeding, two key informants disagreed (five did not answer this question). Three key informants felt that the effects of the initiative are long-lasting, while two said that they are short-term. The other six key informants did not answer this question.

According to key informants, apart from BFHI, ways of receiving information about breastfeeding in Belize are:

- health fairs
- mobile clinics
- Breastfeeding Week,
- handouts, pamphlets, brochures, posters (at hospitals, clinics, health facilities)
- social media / internet
- Breastfeeding counsellors
- videos at health facilities
- support groups
- the internet

Seven key informants believe that this additional information influences women to do something differently when it comes to breastfeeding. The other four key informants did not answer this question.

HECOPAB, the health information bureau, is also involved in promoting breastfeeding and providing education, according to key informants. It helps to organize health fairs, including Breastfeeding Week/Month, delivers information and produces materials and training curricula for community health workers. Mobile clinics in rural villages, presentations and talks, as well as education promotion sessions, in person and via social media, are also conducted.

Other organizations and stakeholders that were mentioned to be involved in the promotion of and education for breastfeeding, include community-based organisations (community centres, family life association), community health workers, UNICEF, the Food and Agriculture Organization, Pan American Health Organization (PAHO), the Instituto de Nutrición de Centro América y Panamá (INCAP), the Ministry of Education, the Ministry of Human Development and the Ministry of Agriculture.

MENTAL HEALTH AMONG CAREGIVERS

KEY FINDINGS:

- ★ Of the women interviewed, every second woman displays poor mental health and is at risk of developing mental health disorders.
- ★ No significant relationship between breastfeeding and mental health could be found.
- ★ Fewer children, higher education level, and higher socioeconomic status are related to better mental health.
- ★ Mothers with poor mental health can name more barriers to breastfeeding and know more about the connection between nutrition and stunting than mothers with good mental health.
- ★ Mental health problems are a taboo topic in Belize, but the paradigm is shifting (according to at least one key informant).
- ★ Mothers are at risk for stress and postpartum depression, but there is no specific care or structure for the mental health of mothers and many mothers do not know where to turn in case of mental health issues.

Caregivers' mental health was assessed using the Self-Reporting Questionnaire (SRQ-20; WHO, 1994), which includes 20 yes/no questions. The suggested cut-off point for an initial validation study is ≥ 7 (defined by mean score; score range was 0–20). We defined a binary variable for good and poor mental health based on this score. Mothers who scored seven points or more were considered as having poor mental health, and mothers who scored less were considered as having good mental health. Of the sample of 32 respondents, 53 per cent (N = 17) scored seven or above on the SRQ-20 scale (M = 0.53, SD = 0.51, SRQ-20 cut-off point ≥ 7) and were thus considered as having poor mental health.

Mental health does not significantly correlate with any of the breastfeeding indicators (exclusive breastfeeding, continued breastfeeding, breastfeeding right after birth), but does correlate significantly with the number of children the respondent has ($r = 0.498^{**}$), level of education ($r = -0.360^*$), socioeconomic situation ($r = 0.357^*$), the barriers to breastfeeding mentioned ($r = 0.394^*$), and knowledge that food influences stunting ($r = 0.484^{**}$).

In summary, mothers with poor mental health have more children, are less educated, are from poorer families (lower socioeconomic situation), are more aware of barriers to breastfeeding and know more about the connection between nutrition and stunting than mothers with good mental health.

KII: According to one key informant, mental health problems remain a taboo in Belize, but the paradigm is shifting.

FGDs: Participants of several FGDs pointed out that there is no specific care or structure for the mental health of mothers. Especially being a mother of a newborn can be very stressful and postpartum depression can occur. Participants indicated that they did not know where to turn in case of mental health issues and that there was no system to detect it.

LIMITATIONS AND POSSIBLE MITIGATION MEASURES

The participants in the FGDs and interviews were exclusively found through hospital and clinic networks. All participants of this study have the means to get to hospital and to receive medical controls. Thus, this study is missing access to the poorest, most vulnerable and marginalized populations.

While there is a general view (also held by key informants) that almost all women in Belize give birth at a medical facility, there is a probability that an unknown number of women give birth at home and do not seek medical attention. This study is not representative of this population; moreover, they may remain unreachable by information about and promotion for breastfeeding does not reach them through this important channel. However, HECOPAB and collaborating community health workers seem to be a good link to these populations and mobile health interventions can reach women who cannot visit health facilities.

It was difficult to find mothers for interviews for study 2 who were not breastfeeding, which is why mothers who are not breastfeeding may be underrepresented. However, since study 2 is a qualitative study, representativity cannot be expected. The next MICS study will confirm the correct percentages representatively.

There seems to be a difference in the quality and quantity of information available at clinics. Private clinics do not support breastfeeding: some support breastmilk substitutes and might even be paid by companies to promote their products. Even among public clinics, some appear well equipped with information and promotion to support

breastfeeding, while others even forbid bottles, making it more of a campaign against bottle-feeding than one for breastfeeding. Scheduled, standardised information and promotion, paired with medical controls or check-ups, could be used to make sure that all BFHI clinics and hospitals give good-quality information at the same points in time to all mothers. Continuous training and proper support for hospital staff would further ensure high-quality implementation. Materials about the following topics should always be available, in English and Spanish, and with contact information or where to find additional support:

- Breastfeeding: Reasons for and advantages of breastfeeding; possible problems (latching, positioning, not enough milk, baby seems to be still hungry after breastfeeding) and their solutions and where to get further support.
- Working mothers: Breastfeeding and pumping, how to organise, details about pumping and storage.
- Stunting, nutrition (for mother and child) and complementary feeding from six months of age.
- Mental health: Importance of maintaining good mental health, the influence of stress and depression on breastfeeding and the baby's health, warning signs, immediate measures, including how to take care of one's own mental health and accessing further support.

COMMENTS BY PARTICIPANTS

Caregivers were asked if they wished to say or ask about the study or breastfeeding. Their comments are grouped into feedback, questions and anecdotes.

Caregivers provided the following feedback and advice:

- For pregnant mothers, it can take very long to be attended to in the hospital/clinic. Waiting times are too long for working mothers and the chairs are uncomfortable. Special appointments should be instituted for working mothers, with shorter waiting times and perhaps held after 5 pm and with short waiting times.
- Women need to know that stress can cause difficulties breastfeeding, that the baby might not take the breast because of that, and that it can influence the bond with the child. They should know to seek help if needed.
- In one caregiver's opinion, public hospitals do not keep patients' information confidential.
- Breastfeeding is a beautiful experience. It should be taught more, especially to first-time mothers, as it isn't easy but is most rewarding. It creates a bond between mother and child, so the child wants to be with the mother.
- The Ministry of Health should ensure all clinics, including private ones – not just public hospitals – follow breastfeeding protocols. Baby-friendly clinics should receive awards.
- Massaging the breasts and applying a warm towel to the next is good for milk production.
- Breastfeeding all the way!

Key informants recommended:

- Promotion of breastfeeding should begin in primary school.
- Health workers should be trained to promote breastfeeding as well as educating mothers about it.
- Promotion should be tailored to recipients' behaviour and beliefs.
- Breastfeeding promotion should be more proactive and supportive. It should dispel myths and seek to change gender roles.
- Breastfeeding promotion should counteract the marketing of breastmilk substitute.
- The information provided about nutrition and health should include when complementary foods should be introduced, and how culturally appropriate and available food can be prepared to better serve the nutritional needs of children.

FGD participants commented:

- Mothers' groups should be constituted so when mothers come in for children's vaccinations at six months, they can be educated about complementary feeding.
- Mothers are supposed to be "superwomen".
- Women should be aware that breastfeeding can be a contraceptive.

Caregivers also asked for information on:

- The transition from breastfeeding to complementary feeding and their link with stunting.
- Whether infant formula is bad.





4. CONCLUSIONS AND RECOMMENDATIONS

4.1. STUDY 1: QUANTITATIVE ANALYSIS

RQ1: What are the characteristics of the levels and inequalities of key indicators for exclusive breastfeeding, continued breastfeeding and complementary feeding practices and stunting?

RQ2: What are the characteristics of macro-level trends in these outcomes from MICS 3 to MICS 5?

While the prevalence of exclusive breastfeeding has increased over the years, in 2015/2016 it still stood at 33 per cent, meaning that two out of three children were still not exclusively breastfed in the first six months of life.

Although a gender difference remains for exclusive breastfeeding, with girls more likely to be exclusively breastfed for the first six months than boys, this inequality has decreased over the years.

Wealth, education and geographical area are closely related to rates of exclusive breastfeeding. Mothers with lower education levels are more likely to exclusively breastfeed their babies, compared to mothers with higher education levels. Wealthier families practise exclusive breastfeeding less often than poorer families. In rural

areas, mothers are more likely to practise exclusive breastfeeding for the first six months, compared to mothers in urban areas.

Around 80 per cent of children ages 6–8 months received complementary feeding in 2015/2016, a rate that has doubled since 2006. This suggests that the introduction of complementary feeding is becoming more closely aligned to the recommended age of six months. The prevalence of complementary feeding along with continued breastfeeding is higher in rural than in urban areas.

Toledo has consistently had the highest prevalence of stunting was in Toledo, with every second child in the district being small for their age. Across the country, although the prevalence of stunting had fallen by 2015/2016 it remained as high as 15 per cent.

Although the prevalence of exclusive breastfeeding, breastfeeding and complementary feeding is higher in rural areas, among poorer and less educated mothers, the prevalence of stunting is higher among these vulnerable groups.

RQ3: Which factors are associated with changes in these outcomes over time?

Area is a significant predictor of exclusive breastfeeding: urban mothers breastfeed less than rural mothers, and this difference is growing. By contrast, the difference in exclusive breastfeeding by gender of baby shows a decreasing trend, which is in line with our findings for RQ1 and RQ2.

In 2006, children in rural areas and those with underweight were more likely to be stunted compared to children in urban areas and those who were not underweight. Lower maternal education, poorer families, lower BMI and underweight were significant predictors for stunting in 2011. By 2015/2016, however, BMI was no longer a significant predictor of stunting (with a decreasing trend over time), though area and exclusive breastfeeding remained significant

predictors.

Exclusive breastfeeding has increased and stunting has decreased significantly over the years. A statistically significant relationship between exclusive breastfeeding and stunting was found in 2015/2016, perhaps because adequate weight amongst children contributed to reductions in stunting. Underweight among children, especially in rural areas, should be a warning sign for stunting. The greater prevalence of stunting in rural areas may relate to lower incomes, distance between communities and to health facilities and lower availability of diverse nutrition. Lower maternal education and household wealth also relate to higher levels of stunting.

The higher prevalence of exclusive breastfeeding, breastfeeding and complementary feeding in rural areas and among poorer and less educated mothers suggests that other factors contribute to higher stunting prevalence in rural areas. Factors may include poor WASH, less varied nutrition, difficulty of accessing health care and higher associated costs (e.g. transport and time) and greater likelihood of spaces that are shared with animals. The nutritional status of the mother may also be a critical factor as her diet, in terms of quantity, quality and variety, influences the child's health during pregnancy and lactation, as well as through complementary feeding choices.

To conclude, area of origin (urban/rural) appears to be the most important factor in both stunting and exclusive breastfeeding. Further investigation is needed to investigate why stunting is more prevalent in rural areas when sound nutritional practices are more prevalent in urban areas.

Study 1 shows a significant increase in exclusive breastfeeding and a significant decrease in Belize over the years. The findings suggest that to address stunting, behaviour change interventions should target the most vulnerable groups: mothers who are poorer, less educated, and who live in rural areas.

RECOMMENDATIONS:

- 👍 Conduct further research on other contextual and psychosocial factors that impact on breastfeeding and stunting.

4.2. STUDY 2: QUALITATIVE ANALYSIS

RQ1: What are the practices and the motives of women to breastfeed a child?

Of the 33 mothers interviewed, 93 per cent claimed to have breastfed their child (including exclusive, non-exclusive and complementary breastfeeding), 82 per cent exclusively breastfed their child during the first six months of life and 78 per cent breastfed within one hour after birth. Thus, some form of breastfeeding is widely practised, and exclusive breastfeeding is more commonly practiced than breastfeeding right after birth.

Most people did not think that the gender of the baby has an influence on breastfeeding, though some suggestions based on gender were made, mostly relating boys needing more milk and being rougher, and girls motivating protective feelings. More children in the household can have a positive effect on breastfeeding through the support provided by older siblings or positive experiences of breastfeeding older siblings. Negative effects can also arise, from greater stress and less available time, or due to negative experiences breastfeeding older siblings.

The most important motivations for breastfeeding are that breastfed babies are healthier (a better immune system, more antibodies, less disease, less prone to obesity), and their development is better (they develop stronger, grow better, are perceived as more chubby, beautiful, active, responsive and smart, and have better digestion). Breastmilk is perceived to be better

for the child: easier on the stomach, easy and more practical, comfortable, natural, soothing and nutritious, leads to a calmer baby. Economic motivations include its low cost. Breastmilk is considered to create love and connection. It is seen as better for the mother, because it contributes to her health, prevents cancer, hypertension, infection and depression, and decreases bleeding, contracts the uterus and helps with weight loss.

RECOMMENDATIONS:

- 👍 Integrate messaging on the benefits of breastfeeding for mother and child, healthy child development, economic advantages and how breastfeeding can help create a bond between mother and child in the information provided to mothers on breastfeeding.
- 👍 Expand focus of information materials to promote breastfeeding as well as give information.
- 👍 Incorporate behaviour change strategies that address attitudes, emotions, norms, abilities and planning to increase the impact of this communication.



RQ2(i): What are the motivating and inhibiting factors for early initiation of breastfeeding within one hour after birth?

Key factors that support breastfeeding within an hour of birth can be found at the hospitals themselves. These include supportive nurses, who give clear instructions, information and a helping hand play a crucial role in whether or not a mother breastfeeds right after birth. Critically, they give information on why breastfeeding is good and troubleshoot problems with latching, positioning, breastmilk production and breast care. Informational pamphlets and posters, which are readily available at hospitals and on doctors' visits, are also important. In Belize, BFHI has played an essential role in increasing breastfeeding rates by training hospital staff and establishing the right policies at hospitals. This is vital because all public hospitals are part of BFHI, and the public health system appears to reach the majority of mothers who give birth in Belize.

RECOMMENDATIONS:

- 👍 Enhance training for doctors, who are highly trusted by patients but are rarely mentioned as giving breastfeeding information and advice. Doctor visits can be used to reach mothers with critical information on key milestones, such as scheduled vaccinations, the next stage in infant and young child feeding, etc.
- 👍 Extend breastfeeding messaging and support to the private sector, which is often not supportive of breastfeeding or even outright advertises breastmilk substitutes or gives babies the bottle without maternal consent. Some manufacturers of breastmilk substitutes also reach the private sector with financial contributions and samples; compliance with the International Code of Marketing of Breastmilk Substitutes should be encouraged.
- 👍 Increase support for mothers so they do not feel forced to breastfeed. BFHI should support breastfeeding

rather than prohibit bottle feeding. While persuasion and information are paramount, bottle-feeding mothers should not be stigmatised or forced.

- 👍 Expand training for hospital staff and nurses to promote breastfeeding and achieve behaviour change rather than just giving information about it. Health-workers should also be trained on supporting mothers, detecting mental health problems, giving mental health "first aid" and suggesting how to access further mental support.

RQ2(ii): What are the motivating and inhibiting factors for exclusive breastfeeding during the first six months of life?

The main motivations for exclusive breastfeeding are the same as for breastfeeding in general: breastfed babies are healthier, develop better, breastmilk is better, it is cheaper than the alternatives, breastfeeding creates love and connection, and is better for the mother.

Mothers who perceive not practising exclusive breastfeeding as less severe, i.e. connect it less to fear-based reasons, practice exclusive breastfeeding longer on average. The older the mother, the longer she tends to exclusively breastfeed.

One of the strongest inhibiting factors to exclusive breastfeeding is work. Maternity leave is not available for many women who are self-employed or work on farms, and even those employed in mainstream careers might not always receive maternity leave. Even when mothers receive maternity leave they almost always receive three months at most, rather than the six months for which exclusive breastfeeding is recommended. Once mothers return to work, exclusive breastfeeding becomes more complicated and requires mothers to pump throughout the day. This in turn requires space, time and privacy which are

rarely made available as workplaces are not usually supportive nor aware of this need. Pumping also requires planning and effort which can overwhelm mothers who are already in a stressful situation.

Illness can also inhibit exclusive breastfeeding. Mothers might be afraid to pass on sickness, even when it is not contagious: one interviewee was concerned about passing on her diabetes, a fear that persisted even when she was informed that breastfeeding actually protects from diabetes. Conditions requiring surgery or certain medication can also interrupt breastfeeding.

Lack of support from partners, families and communities can inhibit mothers from breastfeeding, whether due to persuasion about the value of bottle-feeding or because the mother is overwhelmed with responsibilities. Public breastfeeding can incite stigma, with mothers being perceived as indecent. Advertisements presenting breastmilk substitute and bottle-feeding as cleaner, easier, and healthier, can present the last push needed to stop breastfeeding or to not consider practising it.

Women can also be affected negatively by breastfeeding. Many feel their breasts are affected: they can hurt, get infected or blistered, the baby drinks too roughly, and there are aesthetic concerns

about sagging or leaking breasts.

Mental health can present a barrier to breastfeeding. Mothers may experience postpartum depression, be stressed, tired or otherwise distressed, or feel they have to share their body and find breastfeeding physically demanding. Breastfeeding can take patience, time and effort.

Mothers may experience difficulties with the act of breastfeeding such as struggling to produce enough milk, perceiving the milk to be insufficient or have dried up, and perceiving breastmilk substitute as more filling. There can be a lack of knowledge about how to increase milk production.

RECOMMENDATIONS:

- 👍 Ensure supportive workplaces that give time and private space for pumping or breastfeeding.
- 👍 Ensure mother receive support for their mental health from partners, families, communities and the public health system.
- 👍 Promote greater social acceptance and awareness of breastfeeding.
- 👍 Train more professionals to support women with breastfeeding.



RQ2(iii): What are the motivating and inhibiting factors for continuation of breastfeeding to two or more years?

Not all caregivers are aware that a baby should start receiving complementary feeding at six months of age, while some myths remain prevalent: that the quality of breastmilk decreases with time or that boys should not be breastfed for longer than a year.

Of the eight food groups recommended for complementary feeding by WHO, two (group 1: grains, roots, and tubers, and group 6: vitamin-A rich fruits and vegetables) are commonly used, suggesting that these infants do not receive a sufficiently diverse diet. Babies are also commonly fed breastmilk substitutes and adult foods. However, caregivers are generally aware of the importance of good nutrition for growth, naming it first, followed by breastfeeding, love and attention, good care, hygiene and medical care. Inadequate nutrition is the most commonly named reason for stunting, followed by inadequate care, poverty and poor self-care by the mother.

Key informants identify the following issues with complementary feeding: bad food choices for the child (e.g. junk food), negative experiences due to inadequate food, and starting complementary feeding too late. They recommend educating mothers on

stunting and nutrition and promoting breastfeeding, better nutrition during pregnancy and lactation, and complementary feeding.

RECOMMENDATIONS:

- 👍 Educate mothers about complementary feeding and promote availability and use of diverse foods (e.g. by encouraging kitchen gardens for vegetables and fruits, promoting the use of eggs, creating cooking groups or giving community cooking classes).
- 👍 Address myths surrounding breastfeeding, and encourage greater support for breastfeeding mothers, particularly by mobilizing mothers and grandmothers in communities
- 👍 Broaden the training of staff and nurses to address barriers to breastfeeding and provide mental health support.
- 👍 Disseminate information and promote breastfeeding and diverse diets for children through the media and education system.

RQ3: To which extent do women recognize breastfeeding interventions under BFHI?

There is relatively low familiarity with BFHI, despite its extensive reach and impact. About 89 per cent of women were not familiar with the initiative, but after receiving an explanation, 82 per cent confirmed they had received information through it.

The impact of BFHI is beyond doubt. Caregivers who received information through BFHI are very positive about its content and impact, and this is supported by the improvements in breastfeeding and stunting indicators.

RECOMMENDATIONS:

- 👍 Increase the visibility and recognition of BFHI by unifying its branding and logo for use by participating health facilities and information materials, including pamphlets, posters and social media posts.
- 👍 Extend BFHI to the private sector, and create support groups with experienced mothers and increased involvement, education, support and promotion.

RQ4: How feasible are mobile health interventions to promote breastfeeding?

Currently, the main site for breastfeeding promotion is public hospitals through BFHI. It is mainly nurses who provide practical knowledge, information and instructions and, to a lesser extent, promote breastfeeding. While most women give birth in public hospitals, there is an opportunity to complement this with the strong networks developed by HECOPAB, mobile clinics and community health workers to cover communities that face difficulties in regularly travelling to hospitals.

Mothers receive a substantial amount of information from family and friends or social media, and there is an opportunity to use these channels to access hard-to-reach communities.

RECOMMENDATIONS:

- 👍 Use and extend the established channels of community health workers and HECOPAB events to promote breastfeeding.
- 👍 Address topics through community health workers, including promoting breastfeeding, integrating breastfeeding and work, diverse nutrition, mental health care and support.
- 👍 Establish support groups in communities, such as cooking groups, breastfeeding groups with experienced mothers who can give guidance and support, and mental health support groups.
- 👍 Use social media to provide information to a wider range of recipients.



4.3. STUNTING

Study 1 supports the claim that breastfeeding is an important preventative of stunting. Area (rural/urban) and exclusive breastfeeding were significant predictors for stunting in 2015/2016, meaning that children in rural areas who were not exclusively breastfed were more likely to be stunted compared to children who were from urban areas and who were exclusively breastfed for the first six months. All three analysed MICS datasets show an increase in stunting after six months, meaning that after the period of exclusive breastfeeding ends, stunting becomes more likely.

Inadequate nutrition including during pregnancy, may be an important cause of stunting in Belize. Research shows that poverty and stunting are related, while breastfeeding prevents stunting. However, study 1 finds that poorer caregivers practise more exclusive and continued breastfeeding. This should lead to less stunting, but the data actually show a higher prevalence. Previous research (Burchi, Franzo, Frison, 2011) points out the significance of “hidden hunger”, or receiving sufficient quantity but not quality of food.

Indeed, participants in FGDs and interviews pointed out that low-value nutrition is a matter of culture, tradition and availability in many areas. Diverse diet is not necessarily widespread. Indeed, study 2 showed that foods from group 1 (grains, roots and tubers) are by far the most commonly used for complementary feeding, and were mentioned four times as often as any other. Even within this group, grains specifically were mentioned: infants were mainly given bread, tortillas and potatoes for complementary feeding. It is likely that the diets of mothers follow similar patterns with implications for the health of the child and the food given. Finally, most key informants mentioned bad food choices for babies (e.g. white bread or junk food) and considered it one of the main contributing factors in stunting.

ECD is closely connected to breastfeeding and

stunting (Ngure et al., 2014). Breastfed children grow more strongly, with a better immune system, and, in the words of focus group participants, while confirmed by data: they are “smarter” and “chubbier”. As study 1 shows, exclusively and longer breastfed children have better weight (both in terms of over- and underweight), and lower risk of stunting. Stunted children, on the other hand, struggle with consequences for their development and later in life (Ngure et al. 2014).

Rural origin and underweight were significant predictors for stunting in 2006, while in 2011 significant predictors were low maternal education, poorer families, lower BMI and underweight.

Previous research (Ngure et al. 2014) has shown the influence of WASH, specifically for babies, on stunting. With poorer and rural communities more affected by stunting, WASH may be a factor in Belize. This is supported by the finding that the prevalence of stunting is higher in rural, poorer, less educated areas where exclusive breastfeeding, breastfeeding and complementary feeding practices are higher. While study 2 and MICS data suggest wide availability of water supply and WASH infrastructure (see Annex 5.3, Table 32), WASH behaviours were not examined.

RECOMMENDATIONS:

- 👍 **Increase the availability of diverse food groups within culturally acceptable limits. Certain foods might already be common in the region (e.g. carrots, beans, broccoli, squash, eggs), but not be grown in certain communities or just not given to babies.**
- 👍 **Community gardens, cooking groups and trained promoters can increase availability and use of additional food groups.**
- 👍 **Increase the acceptability and use of different, additional and diverse food groups for adults and caregivers through systematic behaviour change communication.**

- 👍 **Focus stunting checks and stunting education on rural areas, poorer communities and mothers with lower education levels.**
- 👍 **Use underweight as a warning sign in stunting checks.**
- 👍 **Review sanitation behaviours (e.g., open defecation, child faeces management, toilet maintenance) and hygiene practices (e.g. handwashing after toilet use, handling children’s faeces and before feeding or breastfeeding; cleaning play areas; hygienic food preparation and child feeding) in highly affected areas, such as Toledo.**
- 👍 **Conduct behaviour change analysis for insight into WASH behaviours to allow for targeted behaviour change communication.**

4.4. BREASTFEEDING

Breastfeeding rates have increased over the years in Belize. The question is how to maintain and accelerate this trend.

Study 2 shows that mothers who can name barriers to breastfeeding tend to breastfeed for fewer months, suggesting that experiencing such barriers may reduce or even curtail breastfeeding.

These barriers include work-related challenges, such as difficulty finding time, space and accommodation for pumping in the workplace. Existing health-care practices in facilities can be barriers to breastfeeding for new mothers, while some hospitals receive or pass on breastmilk substitute samples, which creates an interest in pushing breastmilk substitute onto mothers.

Mothers can experience difficulties due to their lack of experience, such as what to do when the milk dries up or when there is not enough milk, how to increase milk production through massage or nutrition, how to ensure that the baby is full after feeding, how to position the baby correctly, how to ensure latching; how to hold the breast without covering the baby’s nose, how to take care of the breasts and protect the nipples while breastfeeding, and what to do when nipples are inverted.

The study suggests that women who perceive not

breastfeeding to be not so bad for their children, are actually more likely to breastfeed. This suggests that fear-based communication can lead people to opt for the opposite of what they are urged to do, to avoid the negative feeling of fear.

Some illnesses, surgeries or medications may interrupt breastfeeding or potentially cause harm to the child. Generally, though, myths and misconceptions are contributors to the decision not to breastfeed. These include fear of passing on non-communicable diseases to their child, that breastmilk “goes bad”, that breasts can sagging due to breastfeeding, or simply that breastfeeding is somehow an indecent act.

Lack of support from family and the community can inhibit mothers from breastfeeding, as do public perceptions of breastfeeding as indecent or advertisements presenting breastmilk substitute as cleaner, easier and healthier.

Breastfeeding can affect women’s wellbeing, including their self-perceptions and body image. Breastfeeding can cause breasts to hurt, get infected or blistered, treated roughly by the infant, or have aesthetic concerns about sagging or leaking. Women who are depressed, stressed or tired, or who find breastfeeding is taking too great a toll on their body, also require support.

RECOMMENDATIONS:

- 👍 Ensure women are entitled to six months of maternity leave to support exclusive breastfeeding.
- 👍 Advocate for supportive work environments and laws or policies that support working breastfeeding mothers.
- 👍 Continue supporting mothers to breastfeed right after birth, providing instructions and direct help, without making mothers feel like they are forced to breastfeed, but also without promoting breastmilk substitutes and bottle-feeding.
- 👍 Implement the International Code of Marketing of Breast-milk Substitutes in private as well as public hospitals.
- 👍 Train nurses and community health-workers to identify issues emerging from mothers' lack of experience with breastfeeding, and provide guidance online, through informational materials, apps or support groups.
- 👍 Use positive arguments and support for breastfeeding ("breastfeeding helps babies grow healthy and strong"; "this hospital supports breastfeeding") rather than negative ones ("not breastfeeding is bad for the child", "bottle-feeding is not permitted in this hospital").
- 👍 Train doctors to educate mothers on how she can continue breastfeeding in case of sickness, using techniques like pump and dump. This advice should be tailored to mothers' specific circumstances.
- 👍 Incorporate misinformation and rumour management into communication about breastfeeding.
- 👍 Increase public awareness about breastfeeding, and appeal to the public to support breastfeeding mothers, with advice on how this can be done.
- 👍 Focus on women's and mothers' mental health and wellbeing through support groups and training for nurses and doctors. Mental health support and therapy should be available within the public health system and women informed of its existence and when and how to access it.

4.5. COMPLEMENTARY FEEDING

Study 1 shows that around 80 per cent of children aged 6–8 months received complementary feeding in 2015/2016, double the proportion in 2006. Thus, the time of initiating complementary feeding is coming into closer alignment with the recommended six months of age. The prevalence of continued breastfeeding and complementary feeding is higher in rural than in urban areas.

The diversity of complementary food remains a concern: babies are largely fed food groups 1 (grains, roots, and tubers) and 6 (vitamin-A rich fruits and vegetables), as well as potentially concerning foods

like breastmilk substitutes and adult food. However, caregivers are aware of the importance of good nutrition for a baby's growth and identify inadequate nutrition as the reason for stunting.

Key Informants indicate the following issues with complementary feeding: Bad food choices for the child (e.g. junk food), negative experiences through inadequate food and starting complementary feeding too late.

RECOMMENDATIONS:

- 👍 As proposed by key informants, provide more education on stunting and nutrition, breastfeeding promotion, and better nutrition during pregnancy, lactation and complementary feeding.
- 👍 Increase education and promotion around diverse nutrition for complementary feeding and for mothers.
- 👍 Increase the availability and use of diverse foods including by encouraging kitchen gardening, establishing cooking groups or giving cooking classes.
- 👍 Utilize the help of mothers and grandmothers in communities and create community gardens and cooking groups to enhance dietary diversity.
- 👍 Conduct further research on the reasons for stunting in Belize.

4.6. WOMEN'S EMPOWERMENT

Breastfeeding tends to bind mothers to childcare. Babies often bond more strongly with the mother, and necessarily spend more time with her. Men are often less involved or left out, and are seen as providers, not carers. Yet with most women now working outside the home this division of care is no longer fit for purpose. Study 2 has revealed work is a barrier to breastfeeding, yet study 1 finds no data about employment and workload of mothers.

The United Nations (2015) has declared that breastfeeding contributes to SDGs, including to gender equality and workplace rights. This statement bears reflection: does breastfeeding contribute to workplace rights or are workplace rights a necessity to guarantee continued breastfeeding? As study 2 shows, many women have to choose between their jobs and breastfeeding. Many workplaces do not offer time or space for breastfeeding or pumping, and women face great pressure from the demand to do it all. Indeed, breastfeeding can actually increase gender inequality, since biological men cannot physically breastfeed, though they can bottle-feed with breastmilk if pumping is possible for mothers.

Santos et al. (2022) find that the prevalence of exclusive breastfeeding in Latin America is lower for infants whose mothers are employed, and that the prevalence of exclusive breastfeeding is higher in countries with a larger percentage of women in the labour force. Thus, countries where the public is used to working mothers better accommodate breastfeeding.

RECOMMENDATIONS

- 👍 Strengthening women's knowledge of alternative breastfeeding techniques like pumping or expressing and then bottle-feeding breastmilk.
- 👍 Encourage women to speak up and advocate for their rights, and to demand to be supported.
- 👍 Encourage men to do their share of childcare, including by involving them in breastfeeding education, addressing childcare workshops specifically to them and raising awareness among men.
- 👍 Raise awareness and advocate for women's empowerment and a public discussion of gender equality, gender roles and their connection to breastfeeding and infant care.
- 👍 Learn from countries that provide breastfeeding support for working mothers and implement locally relevant lessons.
- 👍 Include indicators to identify working mothers and their workload in the next MICS.

4.7. POLICY, ADVOCACY, ENABLING ENVIRONMENT

While more women are working outside the home, breastfeeding remains an almost purely female topic. There is an urgent need for policy support for infant care and breastfeeding.

Male support for breastfeeding can take many forms, including supporting the mother's mental health and providing time and rest for her, as well as economic support.

There is a need for breastfeeding and pumping accommodation in public spaces and workplaces, and for breastfeeding or pumping during work to be accepted and supported by colleagues and superiors.

At present, maternity leave is usually three months if any is given at all. This is far shorter than the recommended six months of exclusive breastfeeding.



RECOMMENDATIONS:

- 👍 Provide private spaces for breastfeeding and destigmatize breastfeeding in public.
- 👍 Involve fathers in child rearing and infant care, beginning by educating men about breastfeeding, and how they can support mothers including by bottle-feeding pumped breastmilk.
- 👍 Advocate for breastfeeding accommodations in public spaces and workplaces.
- 👍 Advocate for policies supporting maternity leave of six months to cover the period of exclusive breastfeeding.
- 👍 Establish the right to breastfeed right after birth in policies for the entire health sector, private as well as public, and empower women to withhold consent for breastmilk substitute by health-care staff.
- 👍 Ensure the International Code of Marketing of Breast-milk Substitutes is legally anchored and prohibits manufacturers and marketers of breast-milk substitutes to approach hospitals, even with free samples.



4.8. BEHAVIOUR CHANGE CAMPAIGNS AND MESSAGING

These studies provide evidence for the design of effective and sustainable campaigns to enhance exclusive and continued breastfeeding and appropriate complementary feeding. Effective messaging is key for social and behaviour change communication. Awareness-raising and information increase the health-related knowledge in a population, which is a precondition for changed behaviour (Bandura, 1986) in the longer term (Biran et al., 2009; Hoque, Juncker, Sack, Ali, & Aziz, 1996).

Aside from encouraging and motivating people to adopt healthy practices, it is crucial to remember that health benefits are not always the main motivating factor for behaviour change. Privacy, safety, convenience, observation of religious and cultural norms, family support, social status and esteem may be stronger

driving forces than the promise of better health.

RECOMMENDATIONS:

- 👍 Develop behaviour change messaging that is based on evidence (see Table 20), and leverages a broad spectrum of factors beyond risk perception, such as perceived cost and benefits, feelings, social norms, abilities including confidence in performance and self-regulation.
- 👍 Collect quantitative data collection about psychosocial factors (e.g. using the RANAS model) underlying critical health behaviours to inform systematic and targeted behaviour change campaigning.



Table 20: Research findings to inform evidence-based social and behaviour change

| OPTIMAL BEHAVIOUR | CURRENT BEHAVIOUR | KEY BARRIERS | KEY MOTIVATORS | POSSIBLE INTERVENTION |
|---|--|---|---|---|
| All mothers of newborns initiate breastfeeding within one hour of birth and feed their babies with colostrum. | <p>Study 1: Early initiation of breastfeeding rose from 51% in 2006 to 68% in 2015/2016</p> <p>Study 2: 78% of mothers breastfeed within one hour after birth</p> | <p>Complications during birth, including necessary surgeries and C-sections</p> <p>Hospital policies and standard processes (mainly private clinics)</p> <p>Difficulties with milk production and breastfeeding (latching, positioning).</p> <p>Feeling forced to breastfeed</p> | <p>Healthy baby, better development</p> <p>Bonding, love</p> <p>Support from hospital and nurses</p> <p>Information about breastfeeding available</p> | <p>Stronger focus on positive promotion of breastfeeding, no force or prohibitions</p> <p>Integrate mental health topics and breastfeeding promotion into nurses' and doctors' training</p> <p>Couple prenatal visits with vital information and handing out pamphlets</p> <p>Extend BFHI to the private sector</p> |
| All mothers practise exclusive breastfeeding during the first six months. | <p>Study 1: 33% of mothers practise exclusive breastfeeding (2015)</p> <p>Study 2: 82% practice exclusive breastfeeding</p> | <p>Study 1: Higher educational level, higher wealth, urban areas</p> <p>Study 2: Work, mothers' physical and mental health, lack of support, negatively affected breasts, difficulties with breastfeeding</p> | <p>Healthy baby, better development</p> <p>Breastmilk is better, cheaper than formula</p> <p>Supports love and bonding</p> <p>Better for the mother's health</p> <p>Older mothers breastfeed for longer</p> | <p>Ensure support, troubleshoot difficulties with breastfeeding</p> <p>Supportive workplace</p> <p>Shared responsibilities with partner</p> <p>Support through the health system</p> <p>Shift social norms through role models and school discussions</p> |
| All mothers complement breastfeeding with diverse and nutritious foods during the first two years. | <p>Study 1: Onset of complementary feeding at six months is improving over the years</p> <p>Study 2: 93% of mothers continue breastfeeding after six months, paired with complementary feeding</p> | <p>Study 1: Stunting has a higher prevalence in rural, poorer, and less educated areas. Toledo has the highest prevalence.</p> <p>Study 2: Complementary food is not diverse enough</p> <p>Low availability of diverse food</p> <p>Lack of knowledge about when to initiate complementary feeding</p> <p>Lack of action knowledge about nutrition</p> <p>Negative cultural/traditional nutritional habits</p> | <p>Positive, i.e. not fear-based reasons for breastfeeding</p> <p>Positive experiences</p> <p>Less barriers encountered</p> | <p>Support diverse food choices by increasing availability of more food groups</p> <p>Action knowledge about nutrition, e.g. through community cooking groups</p> <p>Six-month doctor visit combined with information on high-quality and diverse nutrition</p> |

4.9. EDUCATION

Study 1 shows that wealth, education, and geographical area play important roles in exclusive breastfeeding. Less educated mothers are more likely to exclusively breastfeed their babies. Wealthier families tend to practise exclusive breastfeeding less often than poorer families. In rural areas, mothers practise more exclusive breastfeeding for the first six months, compared to mothers in urban areas. This raises the question whether the kind of work that mothers have in urban areas makes it more difficult for them to breastfeed, or if social influences (acceptance, stigma, lack of privacy, exposure to advertising) also play a role. On the other hand, stunting is more prevalent in areas where breastfeeding is high: i.e. poorer, less educated, and rural areas.

In study 2, key informants stated that women tend to have children earlier in poorer and less educated communities, and drop out of school earlier. Indeed, in MICS 2006, the wealth index and number of children are negatively associated. This points to the importance of early education on family planning, birth control and breastfeeding.

Early exposure to such information could help reduce drop-out rates or delay them, and to having children at a later age. This is beneficial because older mothers are shown to (exclusively) breastfeed for more months. These factors lead to lower risk of stunting. Fewer children, more education and better socioeconomic status are also related to better mental health. Thus, these measures are likely to increase the life quality of future generations.

RECOMMENDATIONS:

- 👍 Educate girls about the consequences of and responsibilities for raising a child before the age at which school drop-out rates are highest, thus empowering them to take better decisions through more knowledge about their rights, the impact of their decisions and the different options they have to protect themselves
- 👍 Educate boys about their responsibilities and their role in family planning and birth control early, and teach them about modern gender roles and gender equality.

4.10. MENTAL HEALTH

Birth and childcare increases stress which can reduce breastmilk production and motivation to breastfeed. Very high stress can lead to frustration and even aggression towards an infant. In study 2, every second woman interviewed demonstrated poor mental health. Despite the impacts of poor mental health, only some, not all, public hospitals in Belize have a mental health consultant.

RECOMMENDATIONS:

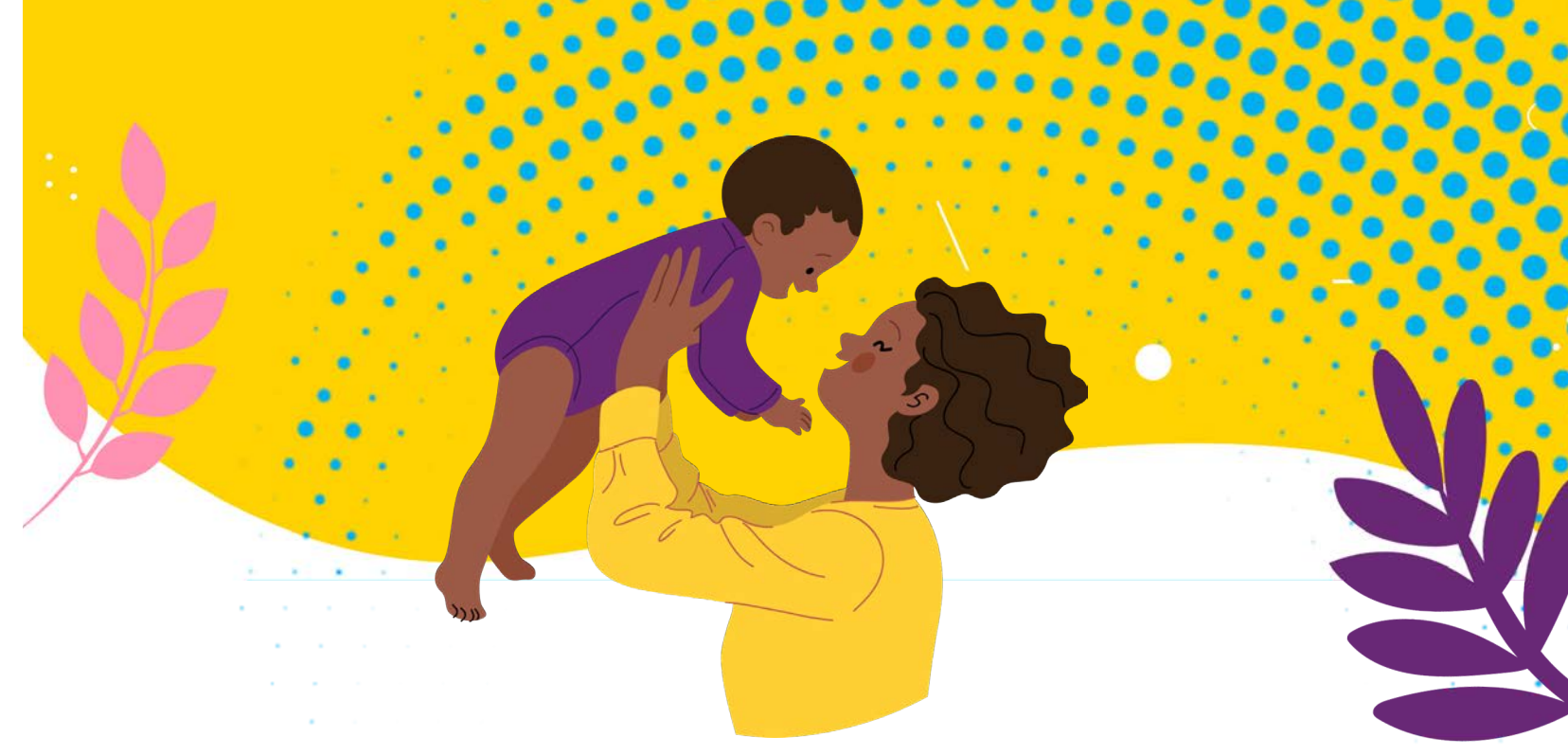
- 👍 Train nurses and doctors to detect mental health concerns, provide mental health care options at public hospitals and make mothers aware of this option.
- 👍 Train community health workers to provide basic mental health support, detect concerns, listen and advise, and refer to further support as required.

4.11. NEXT STEPS

UNICEF can take advantage of its international reach by arranging knowledge exchange about issues of concern in Belize.

For example, research has identified that the prevalence of exclusive breastfeeding is higher in some countries with more women in the labour force (Santos et al, 2022) suggesting that they have found ways to support working mothers with breastfeeding. Knowledge exchange with such countries would be beneficial for Belize where work is a key barrier to breastfeeding. The success of BFHI in Belize should be made visible to other countries where it is not yet as established. Valuable initiatives like BFHI show how health-care can be brought to vulnerable populations and made available to everyone.

Advocacy for gender equality and reducing pressures on women is crucial. Support for women's empowerment, mental health and rights need not be limited to one country, and can occur in the form of awareness-raising, encouraging different groups to do their share as allies or by refusing the status quo, through support groups, fostering exchange and making information available on social media.



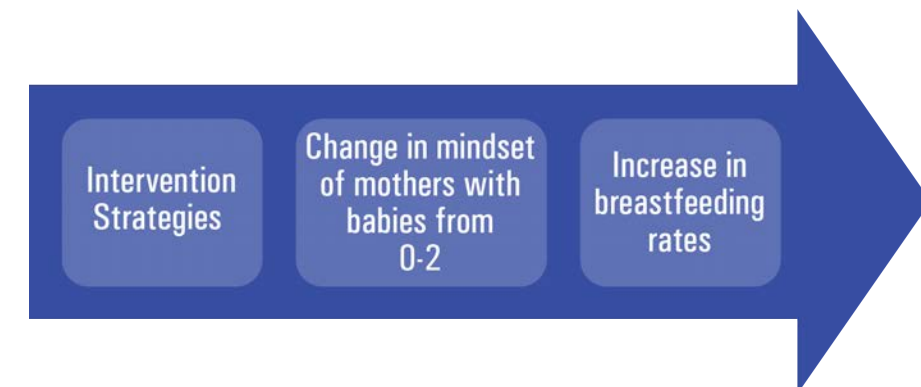
5. ANNEXES

5.1 BACKGROUND

Theory of Change

Existing theories, frameworks and models of health behaviour change to promote health-protective behaviours have been increasingly applied by researchers and practitioners in the last decades. The underlying idea of these theories postulates the following: Behaviours are caused by people's cognitions (thinking), meaning by psychosocial factors which are motivators or barriers of behaviours. These factors can be modified when tackled in an appropriate way.

Figure 9: Theory of change of behaviour change interventions.



Behaviour change interventions aim at changing participants' mindsets, so their beliefs, attitudes, perceived norms, and feelings towards a target behaviour. This change in mindset then translates into behaviour change. More specifically, the interventions change those behavioural factors, which were identified as being most relevant in steering the target behaviour. Behavioural factors, which are found not to be relevant are not targeted. This ensures a high efficiency of interventions. After this study, a detailed

Health Belief Model

Systematic and theory-based health behaviour change models explain why behaviours occur by focusing on behavioural or psychosocial factors, which are motivators or barriers of behaviours. The goal of these models, besides the explanation of health behaviour, is the identification of factors that can be influenced by health programmes. The study at hand is framed around one of these explanatory models, the Health Belief Model (HBM; Becker, Drachman, & Kirscht, 1974; Rosenstock, 1974), which offers various possible factors that can be used to explore and explain breastfeeding behaviour. Factors from the Risks, Attitudes, Norms, Abilities, and Self-regulation model (RANAS, Mosler, 2012) will be added into the questionnaires because it offers additional, proven factors and can thus increase the scope of analysis. Interviewing family and household members, as well as other identified important persons, will help to identify social influence factors.

The basic assumption of the HBM is that the probability of a behaviour change increases with the extent of the perceived threat and the extent of the perceived effectiveness of the health behaviour to reduce this threat. Threat perceptions consist of two factors: perceived vulnerability and perceived severity of a certain disease. Perceived vulnerability relates to beliefs about the susceptibility to a disease or a health threat. Perceived severity represents the estimation

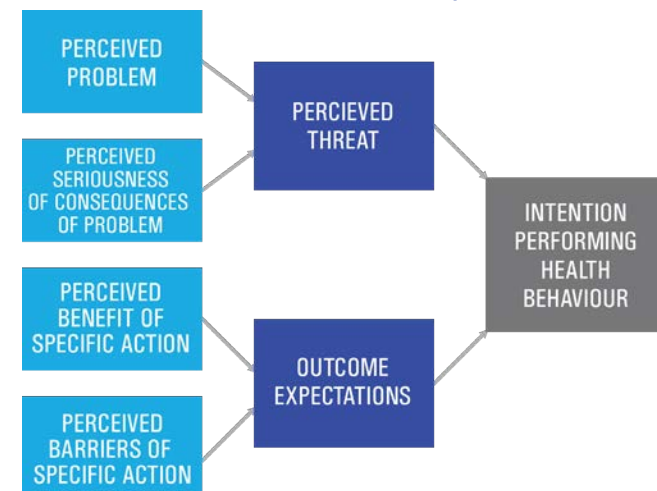
theory of change for breastfeeding behaviour will be developed.

With the in this study described procedure, practitioners will be enabled to develop

- data-driven,
- evidence-based,
- population-tailored and
- theory-grounded interventions and action plans to foster breastfeeding behaviours.

of the perceived negative consequences of a disease or a health threat. The perceived effectiveness of the health behaviour also consists of two factors: the utility and the costs of the behaviour. Costs or barriers are perceived problems that could be encountered when trying to realise the preventative or health protective behaviour. In the revised version of the HBM, health motivation, meaning the willingness to take care of health issues and health questions, has been added to the model (Abraham & Sheeran, 2005). Furthermore, cues to action and situational factors (e.g. health campaigns) were added to the model. Sociodemographic (e.g. gender, age) and psychological characteristics (e.g. personality) are also included in the model.

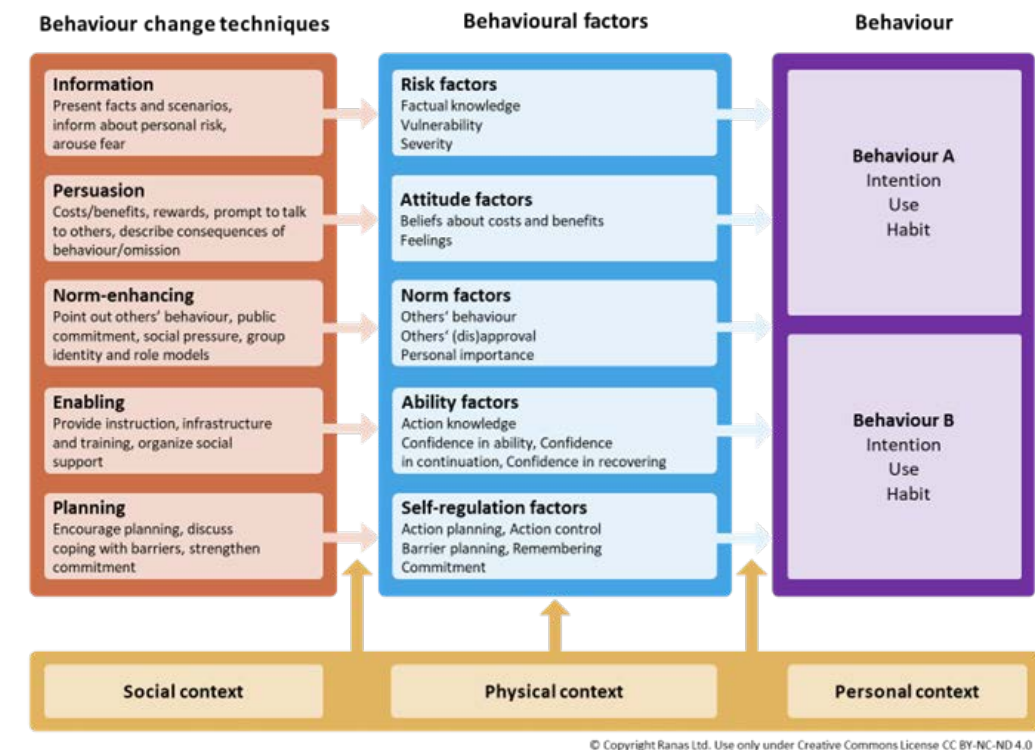
Figure 10: Health Belief Model (Becker et al., 1974; Rosenstock, 1974)



The RANAS Model

In the study at hand, the RANAS model (Mosler, 2012; Ranas, 2022) will be used to provide additional psychosocial factors to the HBM. The model has four components: Behavioural factors that are grouped into five blocks, behaviour change techniques (BCTs) that correspond to the factor blocks, behavioural outcomes, and contextual factors. The first block comprises the risk factors, which represent a person's understanding and awareness of the health risk. Information BCTs, such as the presentation of facts or risk information, can be applied to target them. Attitude factors appear in the second block. They are a person's positive or negative stance towards a behaviour and can be addressed through persuasive BCTs. Norm factors form the third block; they represent the perceived social pressure towards a behaviour and are targeted through norm BCTs. The ability factors form the fourth block. They represent a person's confidence in her or his ability to practise a behaviour and are targeted through infrastructural, skill, and ability BCTs. Self-regulation factors form the last block. They represent a person's attempts to plan and self-monitor a behaviour and to manage conflicting goals and distracting cues. Planning and relapse prevention BCTs can be applied to change them. All the behavioural factors together determine the behavioural outcomes. The RANAS model considers three behavioural outcomes: behaviour, intention, and habit. Behaviour refers to the execution of actions. It can be used or implemented. Both the desired behaviour and competing behaviours must be considered – for example, breastfeeding (Behaviour A) or bottle feeding (Behaviour B). Intention represents a person's readiness to practise a behaviour: how willing the person is to execute something. Habits are routine behaviours that are executed in specific, repeating situations nearly automatically and without any cognitive effort.

Figure 11: The RANAS model of systematic behaviour change



Thus, while HBM and RANAS overlap in their consideration of risk factors, benefits and barriers, the RANAS model additionally considers social norms, abilities and self-regulations.

5.2 METHODOLOGY

General Objectives

The overall objective of this study is to gain an in-depth understanding of the most influential motivators and barriers for women in Belize in terms of breastfeeding, as well as about the behaviours themselves (breastfeeding right after birth, exclusive breastfeeding the first six months of a child's life, complementary feeding additional to breastfeeding up to two years of the child's life). A detailed and profound data analysis of the available MICS data (2015/2016) will be conducted to additionally reveal the influence of family members and health care workers on breastfeeding practices. Previous data showed that across the regions in Belize, different breastfeeding patterns exist. The study at hand aims to reveal the different motivators and barriers to optimise the behaviour change communication in the different regions according to the specific regional drivers of breastfeeding. Further, child-gender-related differences in breastfeeding behaviours and reasons for differences will be examined. Based on the existing and the newly collected data, recommendations about messaging and campaigning to foster breastfeeding in Belize will be provided. Further, the insight shall serve to improve work on breastfeeding globally, thus ensuring not only a better experience for mothers, but most importantly a better health and development for babies worldwide.

The focus of the study at hand is on breastfeeding; however, the interconnectedness between breastfeeding, complementary feeding, nutrition, and stunting is obvious and will thus be included in the overall analysis. A holistic understanding of the behaviours and related factors (behavioural factors, mental health, context) is sought to be created.

STUDY 1: Research Questions and Objectives

The specific objective of study 1 is to conduct an in-depth analysis of Belize MICS data (MICS 3, 4, and 5) to develop a nuanced understanding of what the levels of breastfeeding are in Belize over time and the factors associated with changes in breastfeeding across the country. Different levels of breastfeeding indicators will be revealed, and it will be identified which populations are least likely to breastfeed, how feeding patterns are changing over time and which factors contribute to those changes. The found results will be used to adapt or bolster programmes that foster breastfeeding.

Study 1 uses all available MICS and comparable data from Belize and the sub region, Caribbean, to explain various outcomes and show a breastfeeding graph of patterns and comparisons. The analysis goes beyond descriptive analysis seen in MICS reports and models the outcomes using various kinds of regressions, controlling for demographic, social and economic factors, and experience with health facilities (e.g. vaccinations, use of prenatal care, treatment for common diseases, etc.).

The study will show the levels of different breastfeeding indicators, identify which populations are least likely to breastfeed, how feeding patterns are changing over time and which factors contribute to those changes, after appropriate statistical controls are applied. This can translate to direct points of entry for programmes to implement new strategies or bolster existing strategies that focus on these outcomes.

The aim of the assignment is to identify the factors associated with changes over time in exclusive breastfeeding, continued breastfeeding and complementary feeding practices among caregivers in Belize and which implications for behaviour change interventions can therefore be derived.

Following research questions were addressed in this work:

1. What are the characteristics of the levels and inequalities of key indicators for exclusive breastfeeding, continued breastfeeding and complementary feeding practices, and stunting?
2. What are the characteristics of macro-level trends in these outcomes from MICS 3 to MICS 5? 3) Which factors are associated with changes in these outcomes over time?

In order to answer the research questions above, the specific objectives were investigated as follows:

- **Objective 1:** Prevalence of: i) exclusive breastfeeding for the first 6 months (babies ages 0-5 months); ii) continued breastfeeding and complementary food practices (children ages 6-23 months); iii) stunting.
- **Objective 2:** Predictors of: i) exclusive breastfeeding for the first 6 months (babies ages 0-5 months) ii) continued breastfeeding and complementary food practices (children ages 6-23 months); iii) stunting.
- **Objective 3:** Change over time (T1, T2, T3).
- **Objective 4:** Underlying mechanisms of exclusive breastfeeding for the first 6 months, continued breastfeeding and complementary feeding of children (age 6-23), and stunting: mediators (optional, depending on results and data).

STUDY 1: Analysis Methods

All data analysis were conducted using the MICS data sets from 2006, 2011 and 2015, as available online (UNICEF, 2022a), using the statistical programme IBM SPSS 27. Data cleaning was conducted prior to analysis (including renaming of variables from different sets). As part of data cleaning, key demographic variables, and outcome variables were checked for missing and incorrect (impossible) values.

As a first step of analysis, descriptive statistics from the dataset including key demographic variables are reported. In a next step, analyses accounted for clustering at the MICS year level by conducting multiple logistic regression models by using exclusive breastfeeding for the first six months, continued breastfeeding and complementary feeding, and stunting as outcomes and selected key variables as predictors. Key variables (predictors) were selected during analysis (frequencies, checking for normal distribution, and correlations with exclusive breastfeeding, continued breastfeeding and complementary feeding practices, and stunting).

To find out about key indicators of outcome variables, data analysis was conducted by performing correlation (Spearman) and logistic regression analyses, using key indicators as predictors, and EBF and stunting as outcomes for the 2006, 2011 and 2016 MICS children data sets. For 2011 and 2015, continued breastfeeding and complementary feeding practices were included as outcomes in a logistic regression model and correlation (Spearman) analysis were performed with key indicators. Key indicators were selected demographic variables such as gender of the baby, area (rural/urban), mothers' education level, BMI (Body Mass Index, WHO flag), wasting, and underweight. Stunting and EBF were also included as independent variables, depending on the outcome (stunting or EBF).

To analyse the underlying mechanisms for objective 4, a multiple mediation model was computed using the PROCESS macro for SPSS 23 (Hayes, 2017).

STUDY 2: Research Questions and Objectives

The specific objective of study 2 is to do an in-depth analysis of motivations and barriers for women to breastfeed at different stages. This insight will be integrated into the messaging strategies for women to increase breastfeeding rates. Further, it will be measured to what extent women who gave birth recently can recall interventions from the Ministry of Health (MoH) such as the Baby Friendly Initiatives, and breastfeeding counselling given during and after pregnancy. Detailed information about the knowledge, the perceptions, beliefs, and the behavioural frequencies of women in relation to breastfeeding will be provided by the study as some of these issues have not yet been covered by other studies (including MICS).

Research questions for study 2 are:

- What are the practices and the motives of women to breastfeed a child?
- What are the motivating and inhibiting factors for breastfeeding at three stages:
 - At early initiation of breastfeeding 1 hour after birth;
 - Exclusive breastfeeding during 6 months; o Continuation of breastfeeding to 2 or more years.
- To which extent do women recognize breastfeeding interventions (implemented by the Ministry of Health and Wellness vis-à-vis the Baby Friendly Initiative in hospitals and breastfeeding counselling during pregnancy)?
- How feasible are mobile health interventions to promote breastfeeding?

STUDY 2: Data Collection Methods

The consultant personally implemented the interviews and FGDs during her stay in Belize from the 24th of August to the 10th of September 2022. Interviews were realised using a semi-structured methodology: Questions from the questionnaire for women and the questionnaire for household members (see annex 5.8.) were asked. Answers were noted down in a resumed form by the consultant directly. The consultant asked clarification questions (even if not included in the questionnaire) where she deemed it relevant. Other questions were skipped when the consultant had already received an answer previously. Where consent to record was given, interviews were recorded, in case clarification was necessary. Interviews were held in English or Spanish, depending on the respondent's preference. Where KII were not held in person, they were released digitally, by key actors filling in the questionnaire via a link that was sent to them. All interviews were held at the respondents' homes or in previously agreed upon spaces (e.g. hospitals and clinics). FGDs followed the FGD guideline (see annex 5.8.) and were held at the districts' clinics or hospitals. UNICEF and MoHW teams greatly supported preparation of times, invitations, and logistics for these interviews, as well as the selection of respondents.

Questionnaires for women were held with currently lactating, non-lactating and pregnant mothers. Questionnaires for household members were held with somebody living in the household and taking care of the child as well and/or having a say in their caretaking, e.g. fathers, grandmothers, aunts, or older siblings.

STUDY 2: Analysis Methods

Triangulation of qualitative and quantitative data is being released in this report, which is important to broaden the overall understanding. The quantitative data available from study 1 is being triangulated with the qualitative data from study 2. Qualitative analyses of collected data was realised by categorising and presenting percentages or sums of answers, as well as summarising the meaning of what has been said by respondents. This categorization of qualitative data, called content analysis, means that the analysts draw on their training background and experience to identify patterns and similarities in answers to find themes, develop classes and thus reduce the vast amount of raw information. This way, meaningful and accessible knowledge and conclusions were created. Identified categories were analysed and displayed in percentages or sums of answers. Additionally, through narrative analysis, the analysts looked for outstanding, exemplary, and meaningful phrases which can be cited to clarify or specify certain aspects or perspectives (e.g. comments which are listed and feedback which was given). Overall, results were grouped to answer specific questions.

Ethical Guidelines

Participation was completely voluntary and based on active informed consent. All participants in all of the data collection methodologies were informed about the purpose of the study, the voluntary and anonymous nature of participation as well as their rights. Specifically, participants were allowed to stop participation at any time and refrain from being contacted again without having to explain why and without any negative consequences for themselves or anyone around them (no participant made use of that right). Oral and written informed consent was collected from all participants. A feedback mechanism was provided which made it possible for participants to seek contact through phone, email, and post, to anonymously hand in any requests or complaints. No complaint or feedback was received outside of the comments during interviews. Collected data was made anonymous by replacing names with codes. Confidentiality, respect of privacy and anonymity ensure an absolute minimum of potential for harm.

The research at hand was prepared in strict accordance with the ethical principles of the UNICEF Procedure for Ethical Standards and Research, Evaluation review and Data Collection and Analysis (2015) and the American Psychological Association (APA), the 1964 Declaration of Helsinki and its later amendments, and the International Ethical Guidelines for Health-related Research Involving Humans prepared by the Council for International Organizations of Medical Sciences, and through consulting the r2hc Research Ethics Tool. All research adhered to the principles respect, beneficence and non-maleficence, and justice.

5.3 RESULTS

LIST OF ADDITIONAL TABLES

- Table 21:** EBF prevalence disaggregated by gender of babies, area, education of mother, wealth index and region (0-6 months)
- Table 22:** Introduction of solid and semi solid foods (CF) among BF children 6-23 months disaggregated by gender
- Table 23:** Introduction of solid and semi solid foods (CF) among BF children 6-23 months disaggregated by education of mother
- Table 24:** Introduction of solid and semi solid foods (CF) among BF children 6-23 months disaggregated by area
- Table 25:** Introduction of solid and semi solid foods (CF) among BF children 6-23 months disaggregated by wealth index
- Table 26:** Introduction of solid and semi solid foods (CF) among BF children 6-23 months by region
- Table 27:** Child stunting prevalence
- Table 28:** Minimum Dietary Diversity indicators
- Table 29:** Available data about food groups
- Table 30:** Prevalence of underweight
- Table 31:** Prevalence of wasting over time
- Table 32:** WASH in Belize over the years (2006, 2011, 2015/16)
- Table 33:** Numbers of answers (yes or no) to different breastfeeding indicators (after birth, EBF and continued BF)
- Table 34:** Reasons for and benefits of BF, named by caretakers, KI and in FGDs
- Table 35:** Reasons against and disadvantages of BF, named by caretakers, KI and in FGDs

LIST OF ADDITIONAL FIGURES

- Figure 12:** Prevalence of EBF by education level of mother over time (2006, 2011, 2015)
- Figure 13:** Prevalence of EBF by wealth index and over time (2006, 2011, 2015)
- Figure 14:** Prevalence of BF and complementary feeding (children 6-23 months) over time (2006, 2011, 2015) by gender and total numbers
- Figure 15:** Prevalence of BF and complementary feeding by education level of mother over time (2006, 2011, 2015)
- Figure 16:** Prevalence of BF and complementary feeding by wealth index and over time (2006, 2011, 2015)
- Figure 17:** Stunting prevalence by gender (height for age: % below -2 SD) and over time (2006, 2011, 2015-16)
- Figure 18:** Child stunting prevalence by mothers' education level and over time (2006, 2011, 2015-16)
- Figure 19:** Child stunting prevalence by wealth index and over time (2006, 2011, 2015-16)
- Figure 20:** Child stunting prevalence by area and over time (2006, 2011, 2015-16)
- Figure 21:** Prevalence of underweight (weight-for-age: % below -2 SD and -3 SD)
- Figure 22:** Prevalence of wasting (weight-for-height: % below -2 SD and 3 SD)
- Figure 23:** Caretaker interviewee percentages by district
- Figure 24:** Caretaker Interviewee percentages by ethnicity

Table 21: EBF prevalence disaggregated by gender of babies, area, education of mother, wealth index and region (0-6 months).

| | 2006 | | 2011 | | 2015 | |
|----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | PERCENT EBF (%) | NR. OF CHILDREN | PERCENT EBF (%) | NR. OF CHILDREN | PERCENT EBF (%) | NR. OF CHILDREN |
| GENDER | | | | | | |
| Male | -4.1 | 49 | 10.5 | 90 | 29.1 | 100 |
| Female | -17.6 | 40 | 21 | 58 | 37.7 | 89 |
| AREA | | | | | | |
| Urban | -15.5 | 33 | 10.9 | 61 | 24.4 | 79 |
| Rural | 6.9 | 56 | 17.3 | 87 | 39.5 | 110 |
| EDUCATION OF MOTHER | | | | | | |
| None/Primary | 11.6 | 57 | 15.3 | 62 | (*)/34.7 | 86 |
| Secondary + | -7.7 | 31 | 11.6 | 75 | 24.1/(*) | 103 |
| WEALTH INDEX | | | | | | |
| Poorest | 8.9 | 60 | 23.7 | 29 | 45.3 | 37 |
| Second | N/A | N/A | 12.9 | 31 | 27.6 | 46 |
| Middle | N/A | N/A | 22.3 | 36 | 21.3 | 40 |
| Fourth | N/A | N/A | 4.6 | 31 | 37.1 | 38 |
| Richest | 12.6 | 29 | (*) | 22 | (*) | 28 |
| DISTRICT | | | | | | |
| Corozal | N/A | N/A | (*) | 18 | 27.8 | 32 |
| Orange Walk | N/A | N/A | 15 | 28 | 29.8 | 37 |
| Belize District | N/A | N/A | 8 | 37 | (*) | 59 |
| Cayo | N/A | N/A | 4.9 | 40 | (*) | 27 |
| Stann Creek | N/A | N/A | (*) | 9 | (*) | 17 |
| Toledo | N/A | N/A | (*) | 16 | 48.7 | 17 |
| TOTAL | 10.2 | 88 | 14.7 | 148 | 33.2 | 189 |

Note. () Figures that are based on 25-49 unweighted cases. (*) Figures that are based on less than 25 unweighted cases. N/A: data not available.

Table 22: Introduction of solid and semi solid foods (CF) among BF children 6-23 months disaggregated by gender

| GENDER | 2006 | | 2011 | | 2015 | |
|--------------|------------|-----------|--------------|------------|-------------|------------|
| | % BF, CF | N | % BF, CF | N | % BF, CF | N |
| | 6-9 MONTHS | | 12-15 MONTHS | | 6-23 MONTHS | |
| Male | (*) | 22 | 63.6 | 57 | 54 | 390 |
| Female | 36.5 | 26 | 60.7 | 59 | 53.7 | 374 |
| Total | 44 | 48 | 41.6 | 37 | 26.8 | 56 |
| | | | 62.1 | 116 | 34.9 | 156 |
| | | | | | 53.8 | 764 |

Note. CF = complementary feeding, meaning receiving solid, semi-solid or soft foods. (*) Figures that are based on less than 25 un-weighted cases. N = Respective number of children

Table 23: Introduction of solid and semi solid foods (CF) among BF children 6-23 months disaggregated by education of mother

| EDUCATION OF MOTHER | 2006 | | 2011 | | 2015 | |
|---------------------|------------|----|--------------|----|-------------|--------|
| | % BF, CF | N | % BF, CF | N | % BF, CF | N |
| | 6-9 MONTHS | | 12-15 MONTHS | | 6-23 MONTHS | |
| None/Primary | 57.9 | 26 | 65.7 | 54 | 60/61.3 | 30/343 |
| Secondary + | (*) | 22 | 60.7 | 51 | 52.2 | 246 |

Note. CF = complementary feeding, meaning receiving solid, semi-solid or soft foods. (*) Figures that are based on less than 25 un-weighted cases. N = Respective number of children

Table 24: Introduction of solid and semi solid foods (CF) among BF children 6-23 months disaggregated by area

| AREA | 2006 | | 2011 | | 2015 | |
|-------|------------|----|--------------|----|-------------|-----|
| | % BF, CF | N | % BF, CF | N | % BF, CF | N |
| | 6-9 MONTHS | | 12-15 MONTHS | | 6-23 MONTHS | |
| Urban | 41.2 | 27 | 49.7 | 50 | 48.7 | 311 |
| Rural | (*) | 21 | 71.5 | 66 | 57.3 | 452 |

Note. CF = complementary feeding, meaning receiving solid, semi-solid or soft foods. (*) Figures that are based on less than 25 un-weighted cases. N = Respective number of children

Table 25: Introduction of solid and semi solid foods (CF) among BF children 6-23 months disaggregated by wealth index

| | 2006 | | 2011 | | 2015 | |
|---------------------|------------------------|-----|--------------------------|----|-------------------------|-----|
| | % BF, CF 6-9 MONTHS | N | % BF, CF 12-15 MONTHS | N | % BF, CF 6-23 MONTHS | N |
| WEALTH INDEX | | | | | | |
| Poorest | 42.9 | 29 | 71.8 | 26 | 65.1 | 184 |
| Second | N/A | N/A | (*) | 25 | 53.8 | 192 |
| Middle | N/A | N/A | (*) | 26 | 50 | 136 |
| Fourth | N/A | N/A | (*) | 23 | 51.2 | 139 |
| Richest | (*) | 19 | (*) | 16 | 43.5 | 113 |

Note. CF = complementary feeding, meaning receiving solid, semi-solid or soft foods. (*) Figures that are based on less than 25 un-weighted cases. N/A: data not available. N = Respective number of children

Table 26: Introduction of solid and semi solid foods (CF) among BF children 6-23 months by region

| | 2006 | | 2011 | | 2015 | |
|-----------------|------------------------|-----|--------------------------|----|-------------------------|-----|
| | % BF, CF 6-9 MONTHS | N | % BF, CF 12-15 MONTHS | N | % BF, CF 6-23 MONTHS | N |
| DISTRICT | | | | | | |
| Corozal | N/A | N/A | 71.8 | 21 | 57.1 | 106 |
| Orange Walk | N/A | N/A | (*) | 17 | 52.6 | 101 |
| Belize District | N/A | N/A | (*) | 30 | 32.9 | 122 |
| Cayo | N/A | N/A | (*) | 24 | 58.2 | 172 |
| Stann Creek | N/A | N/A | (*) | 9 | 54.1 | 96 |
| Toledo | N/A | N/A | (*) | 14 | 74.4 | 87 |

Note. CF = complementary feeding, meaning receiving solid, semi-solid or soft foods. (*) Figures that are based on less than 25 un-weighted cases. N/A: data not available. N = Respective number of children

Table 27: Child stunting prevalence

| | 2006 | | N | 2011 | | N | 2015-16 | | N |
|---------------------------|------------------|------------------|------------|------------------|------------------|-------------|------------------|------------------|-------------|
| | % BELOW -2 SD | % BELOW -3 SD | | % BELOW -2 SD | % BELOW -3 SD | | % BELOW -2 SD | % BELOW -3 SD | |
| GENDER | | | | | | | | | |
| Male | 17.6 | 4.2 | 321 | 18.6 | 5.7 | 902 | 16.2 | 2.7 | 1237 |
| Female | 17.6 | 5.7 | 352 | 20 | 5.2 | 878 | 13.7 | 2.4 | 1173 |
| DISTRICT | | | | | | | | | |
| Corozal | 10.6 | 1.9 | 99 | 19.7 | 5 | 249 | 15.8 | 2.3 | 338 |
| Orange Walk | 6 | 1.4 | 80 | 17.2 | 3.1 | 278 | 13 | 1 | 387 |
| Belize (w/out South Side) | N/A | N/A | N/A | 13.9 | 6.9 | 186 | 8.1 | 0.7 | 306 |
| Belize City South Side | N/A | N/A | N/A | 8.1 | 1.7 | 235 | 10.4 | 3.3 | 277 |
| Belize District | 9.5 | 3.5 | 144 | 10.7 | 4 | 421 | N/A | N/A | N/A |
| Cayo | 18.7 | 5.1 | 179 | 18.6 | 4.1 | 413 | 12.8 | 2.8 | 519 |
| Stann Creek | 22.1 | 3.3 | 82 | 17.5 | 3.5 | 206 | 14.6 | 2.5 | 303 |
| Toledo | 42.7 | 15.3 | 88 | 41.6 | 16.1 | 214 | 33.2 | 6.1 | 279 |
| AREA | | | | | | | | | |
| Urban | 10.9 | 1.5 | 300 | 15.7 | 2.8 | 662 | 10.6 | 2.2 | 914 |
| Rural | 23 | 7.7 | 373 | 21.4 | 7 | 1118 | 17.6 | 2.8 | 1496 |
| AGE | | | | | | | | | |
| < 6 months | 5.2 | 1.9 | 59 | 13.6 | 6.9 | 123 | 9.1 | 0.7 | 168 |
| 6-11 months | 4.3 | 0 | 62 | 10.9 | 3 | 188 | 5.9 | 0.9 | 257 |
| 12-23 months | 24.9 | 8.5 | 144 | 22.8 | 4.3 | 379 | 15.7 | 2.3 | 368 |
| 24-35 months | 21.2 | 4.3 | 132 | 19.5 | 6.8 | 351 | 15.7 | 2.6 | 495 |
| 36-47 months | 12.6 | 4.4 | 130 | 20.7 | 6.3 | 371 | 18.9 | 3.8 | 524 |
| 48-59 months | 22.3 | 5.9 | 144 | 20.3 | 5.1 | 369 | 16.5 | 2.9 | 496 |
| MOTHER'S EDUCATION | | | | | | | | | |
| None | 21.6 | 5.9 | 450 | 28.4 | 9.2 | 93 | 25.5 | 5.4 | 89 |
| Primary | N/A | N/A | N/A | 26.7 | 7.5 | 891 | 19.4 | 3.4 | 1150 |
| Secondary+ | 9.4 | 2.8 | 217 | 10.4 | 2.7 | 747 | 12.3 | 2.1 | 775 |
| Higher | N/A | N/A | N/A | N/A | N/A | | 5.5 | 0.5 | 368 |
| WEALTH INDEX | | | | | | | | | |
| Poorest | 22.3 | 6.5 | 464 | 32.9 | 11.1 | 464 | 26.1 | 4.2 | 579 |
| Second | | | | 21.5 | 3.5 | 415 | 14.5 | 3.5 | 581 |
| Middle | | | | 12.3 | 3.7 | 373 | 12.5 | 1.5 | 499 |
| Fourth | | | | 11.8 | 2.9 | 302 | 10.4 | 1.1 | 438 |
| Richest | 7.2 | 1.4 | 209 | 9 | 3.5 | 226 | 5.4 | 1.4 | 312 |
| TOTAL | 17.6 | 5 | 673 | 19.3 | 5.4 | 1780 | 15 | 2.6 | 2410 |

Note. Height for age: % below -2 SD: short; % below -3 SD: severely stunted.

Figure 12: Prevalence of EBF by education level of mother over time (2006, 2011, 2015)

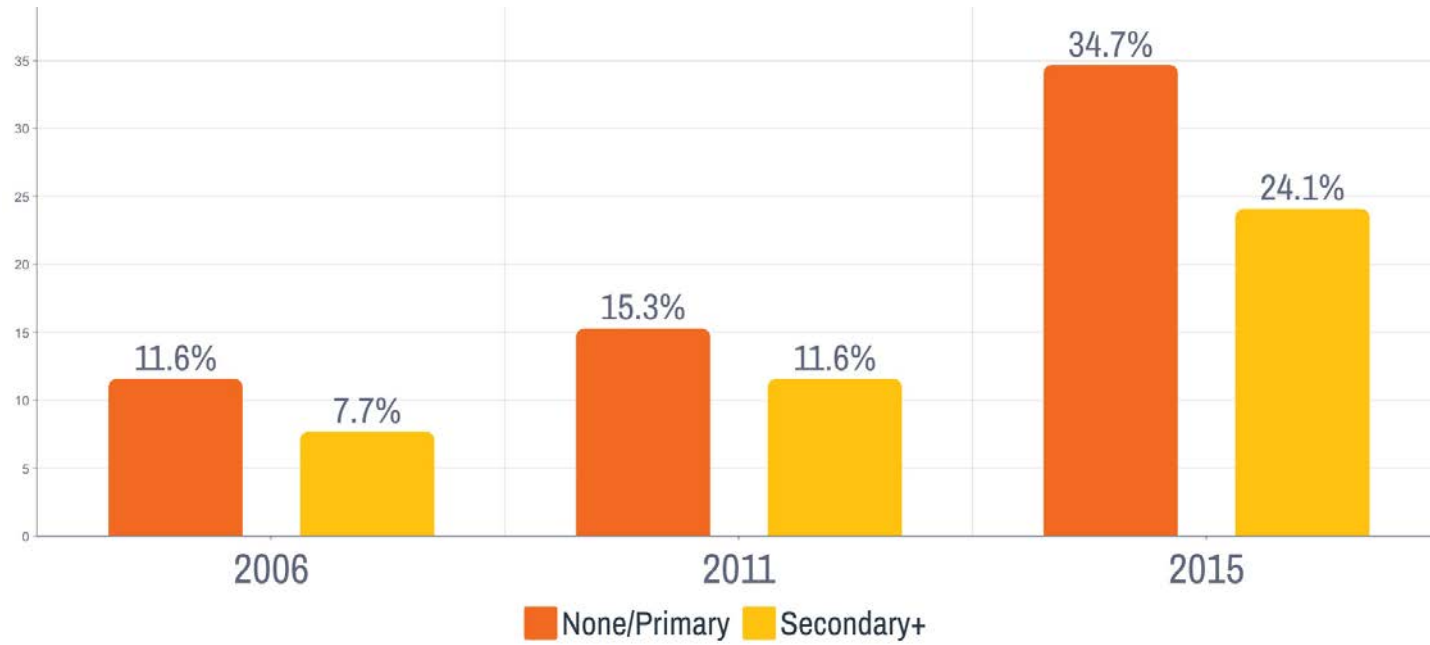


Figure 13: Prevalence of EBF by wealth index and over time (2006, 2011, 2015)

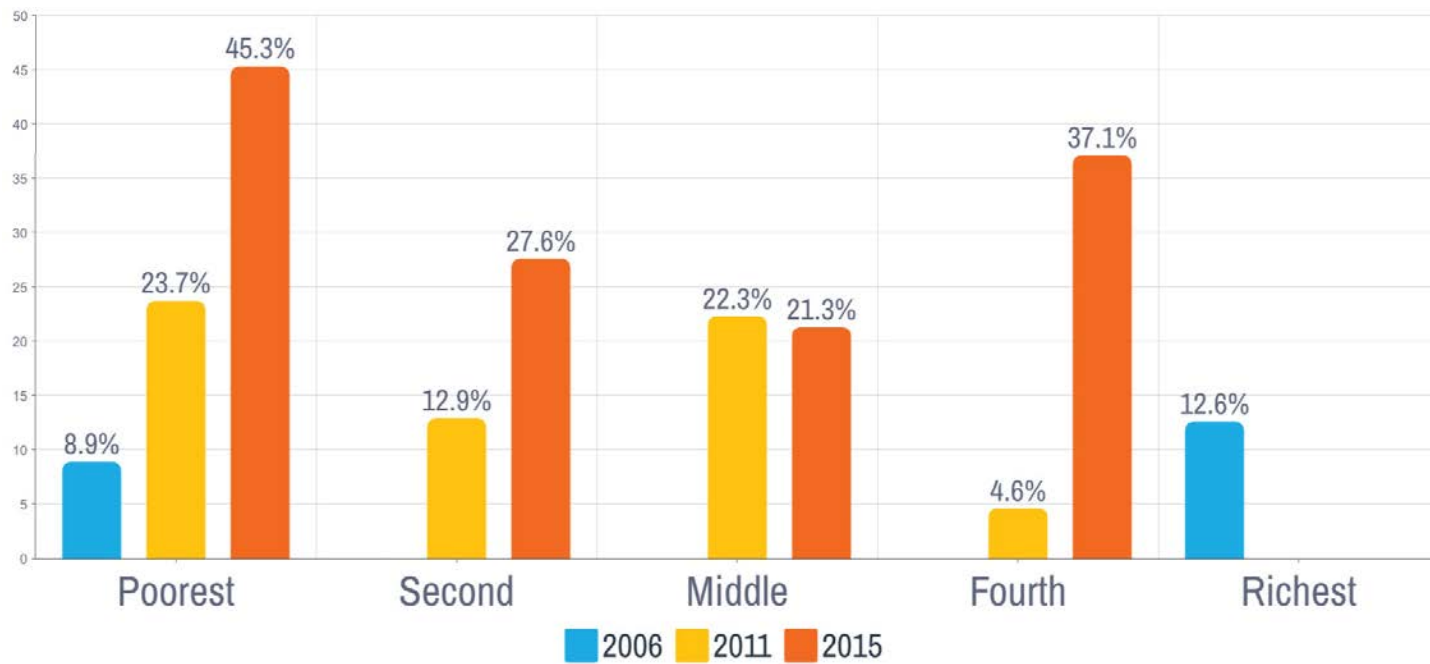


Figure 14: Prevalence of BF and complementary feeding (children 6-23 months) over time (2006, 2011, 2015) by gender and total numbers.

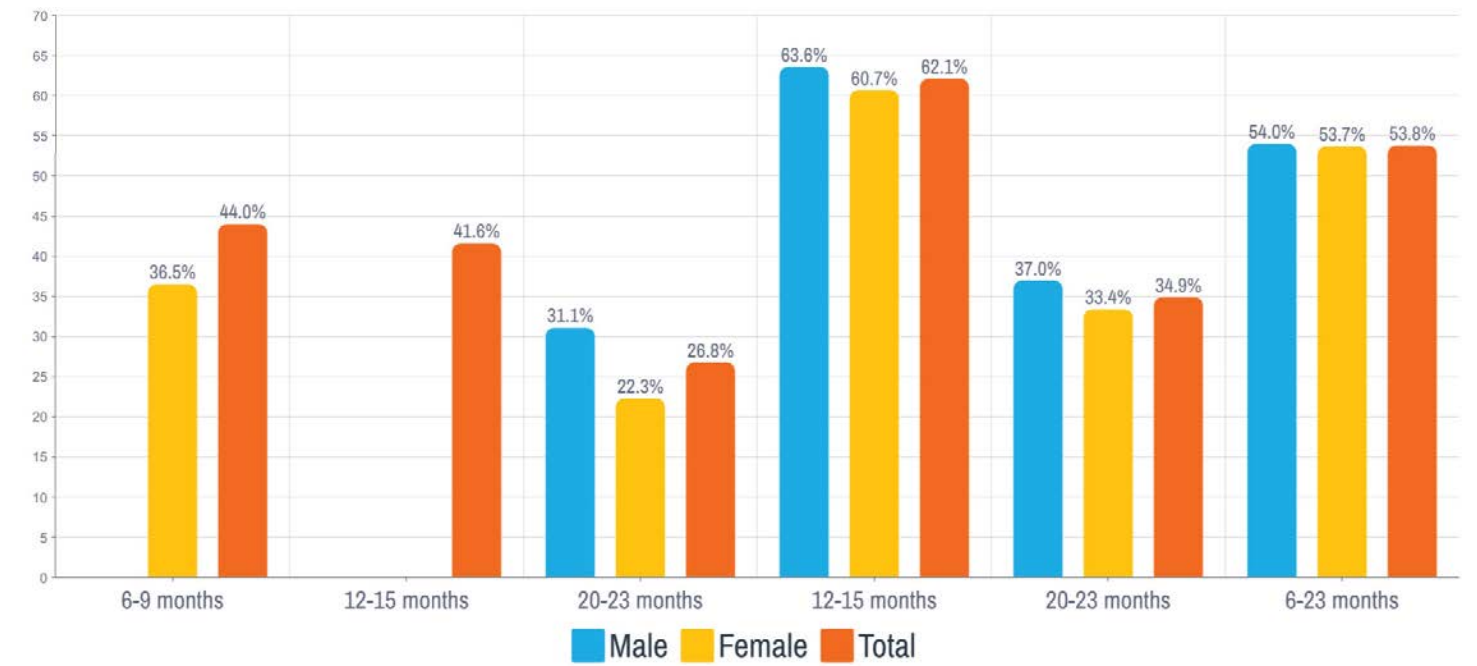


Figure 15: Prevalence of BF and complementary feeding by education level of mother over time (2006, 2011, 2015)

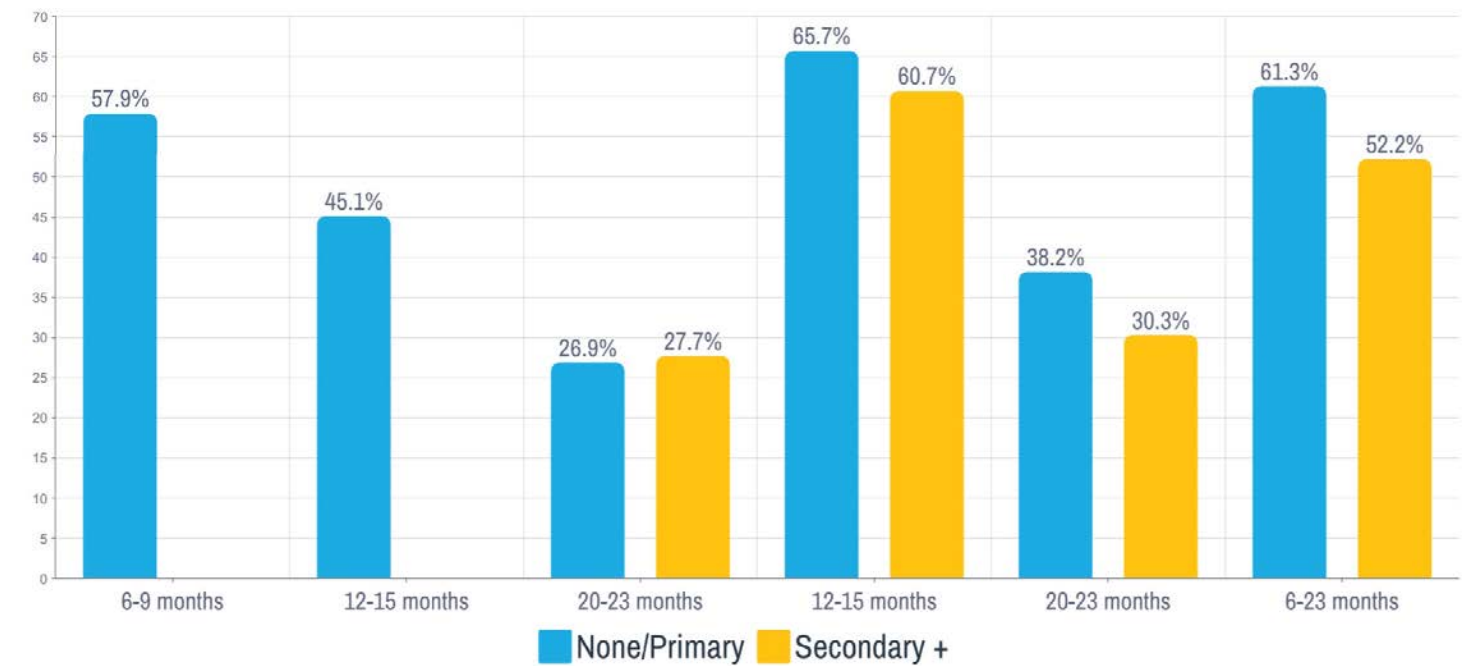


Figure 16: Prevalence of BF and complementary feeding by wealth index and over time (2006, 2011, 2015)

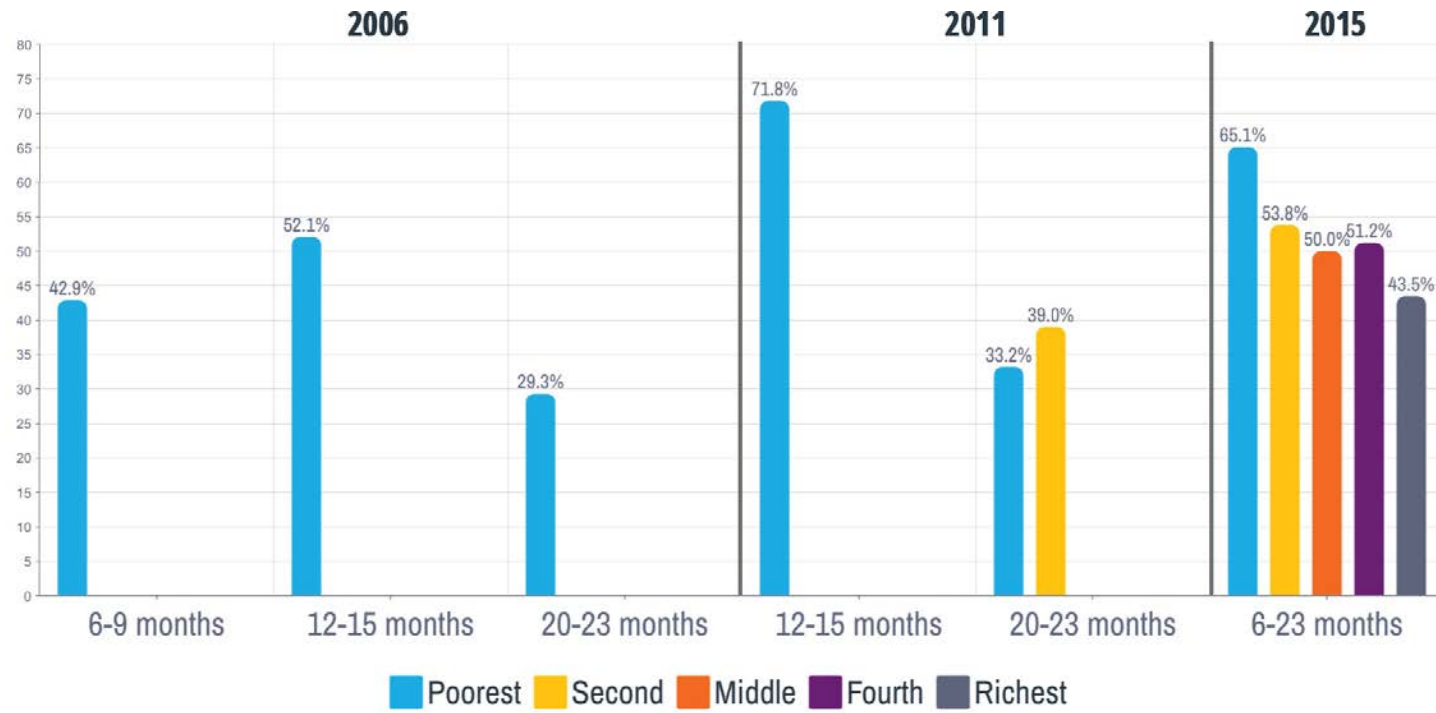


Figure 18: Child stunting prevalence by mothers' education level and over time (2006, 2011, 2015-16)

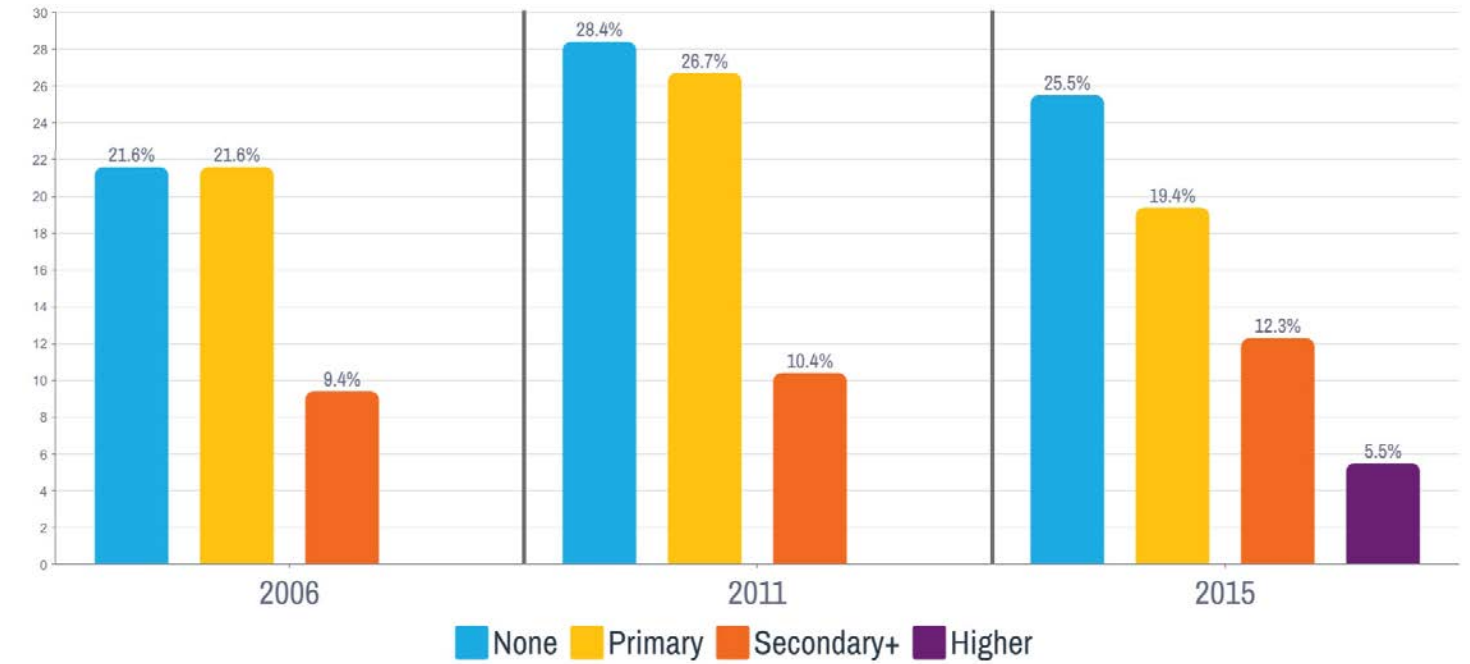


Figure 17: Stunting prevalence by gender (height for age: % below -2 SD) and over time (2006, 2011, 2015-16)

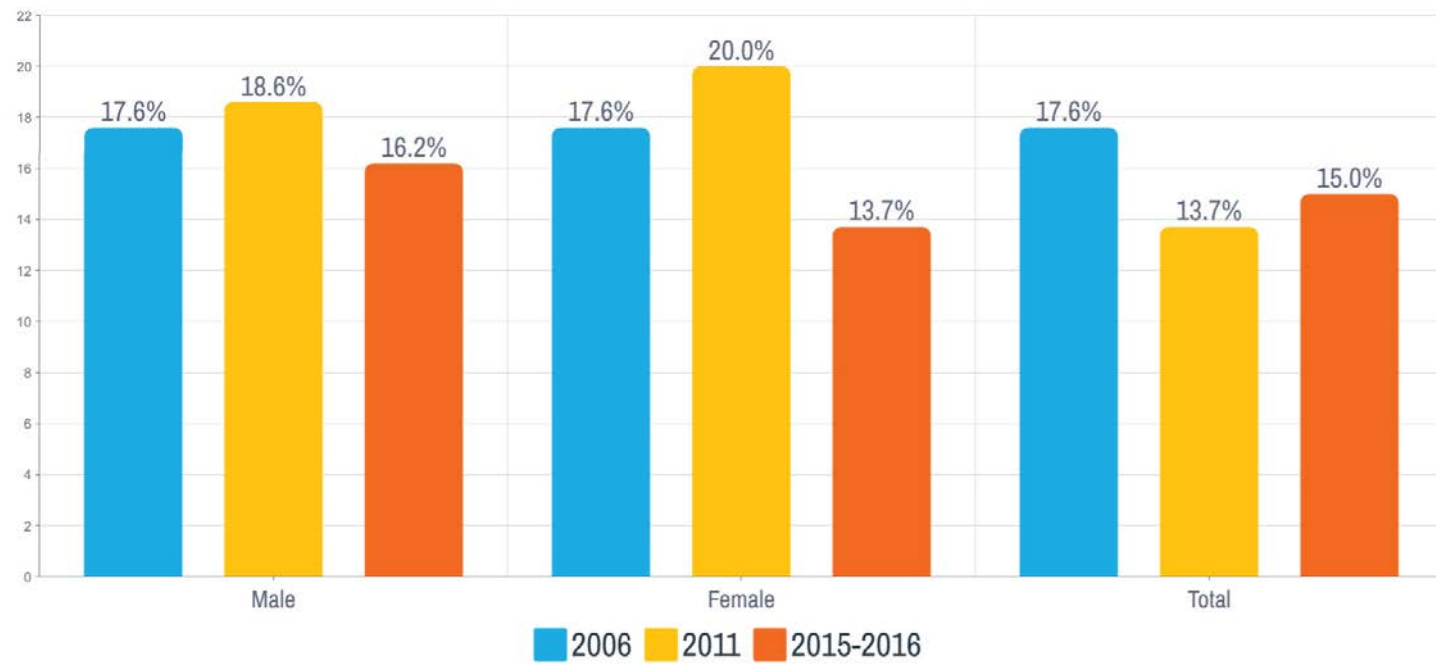


Figure 19: Child stunting prevalence by wealth index and over time (2006, 2011, 2015-16)

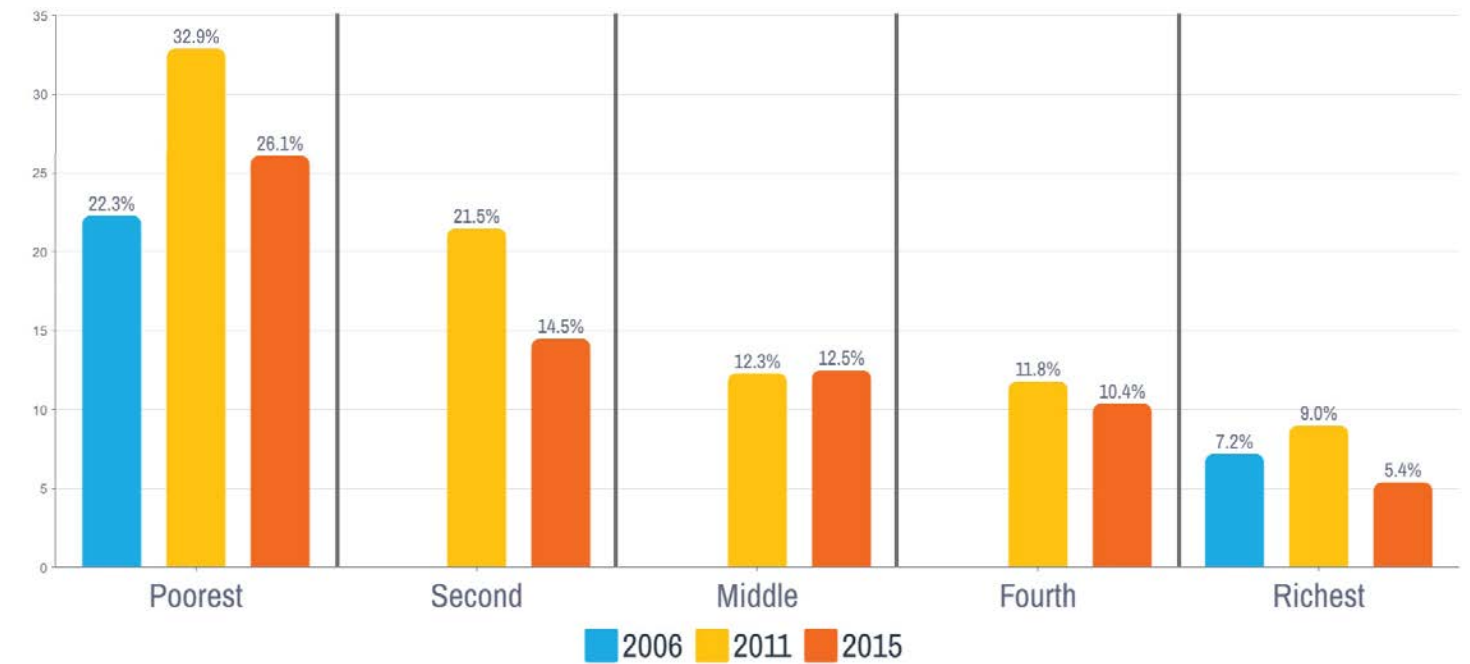


Figure 20: Child stunting prevalence by area and over time (2006, 2011, 2015-16)

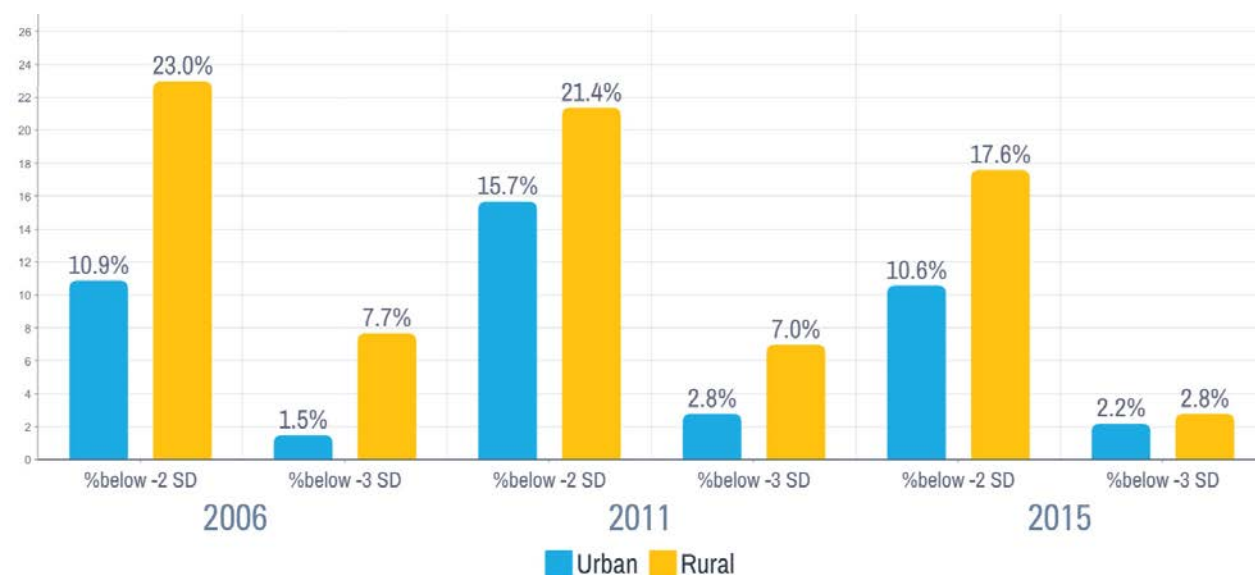


Table 28: Minimum Dietary Diversity indicators

| MICS INDICATOR | 2006 | 2011 | 2015-16 |
|--|--------|-------|---------|
| Minimum dietary diversity Percentage of children age 6– 23 months who received foods from 4 or more food groups during the previous day (definition from 2015-16; indicator 2.15; indicator 2.13 in 2011; indicator 18 in 2006) | 36.8% | 67.6% | 66.3% |
| Introduction of solid, semisolid or soft foods Percentage of infants age 6-8 months who received solid, semi-solid or soft foods during the previous day (definition from 2015-16; indicator 2.13, indicator 2.12 in 2011; indicator 17 in 2006) | 44.00% | 67.4% | 78.8% |

Note: in 2006 age of children was 6-11 months

Table 29: Available data about food groups

| FOOD GROUP | 2006 N=398 | 2011 N=1946 | 2015-16 N=1495 |
|---|---------------|----------------|-------------------|
| Porridge | - | 15.6% | - |
| Yogurt | - | 9.7% | 17.8% |
| Cerelac (fortified baby food) | - | - | 35.1% |
| Foods from Grains | - | - | 71.6% |
| Pumpkin, Carrots, Squash | - | - | 26.4% |
| White Potatoes, White Yams, Manioc | - | - | 39.3% |
| Green Leafy Vegetables | - | - | 15.7% |
| Ripe Mangos, Papayas | - | - | 12.9% |
| Other Fruits and Vegetables | - | - | 53.6% |
| Liver, Kidney, Heart or Other Organ Meat | - | - | 4.5% |
| Meat, such as Beef, Pork, Lamb, Goat, Chicken, Duck | - | - | 55.5% |
| Eggs | - | - | 41.1% |
| Fresh or Dried Fish or Shellfish | - | - | 10.5% |
| Beans, Lentils or Nuts | - | - | 48.6% |
| Cheese or Other Food made from Milk | - | - | 30.8% |
| Other Solid, Semi-solid or Soft Food Yesterday | 82.5% | 85.2% | 15.7% |

PREVALENCE OF UNDERWEIGHT

Weight-for-age¹ is a measure of acute and chronic malnutrition. Children whose weight-for-age is more than two standard deviations below the median of the reference population are considered **moderately or severely underweight** while those whose weight-for-age is more than three standard deviations below the median are classified as **severely underweight** (MICS, 2015-2016).

Breastfeeding can be one influence factor which can reduce the risk of underweight in children. However, this can also depend on the mother’s nutritional status, as well as many other influential factors like the WASH situation, social protection, health, genetics, education, amongst others.

¹ As opposed to height-for-age, which is used as an indicator for stunting.

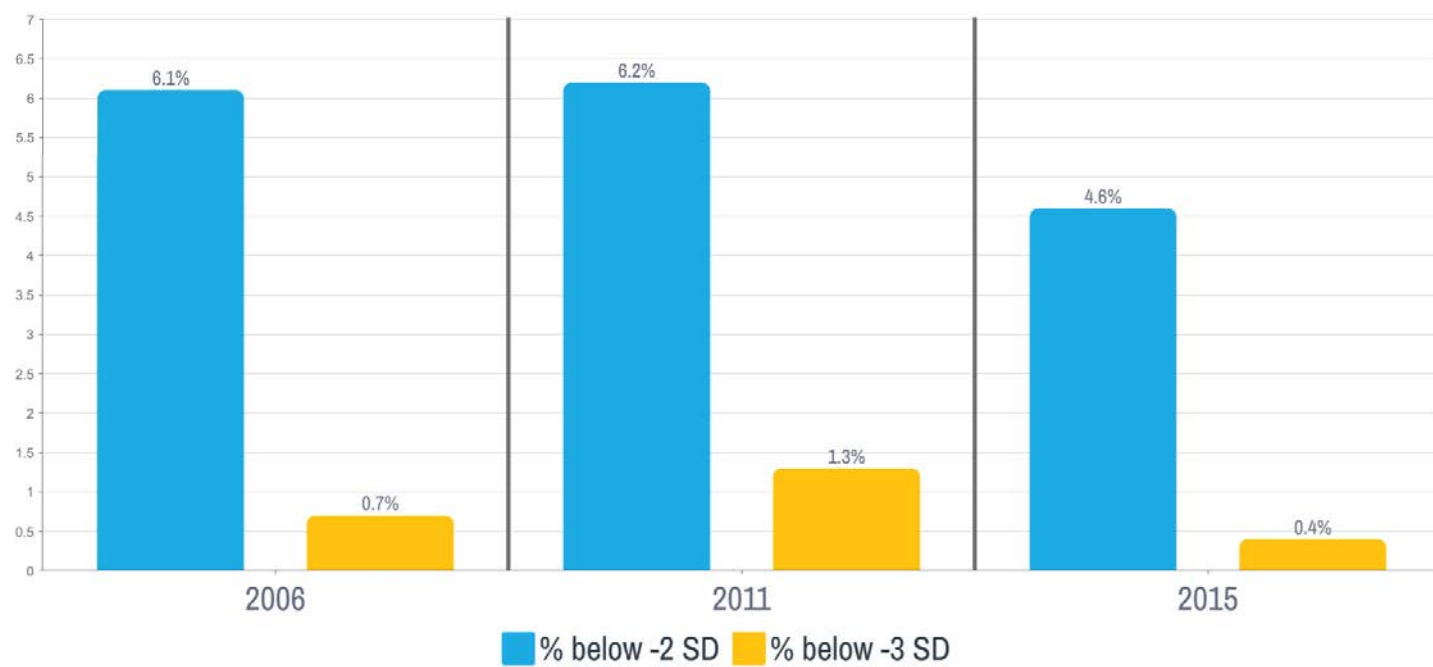
The following table and figure show moderately and severely underweight children over time.

Table 30: Prevalence of underweight

| | 2006 | | | 2011 | | | 2015-16 | | |
|--|--------------|------------|------------|------------|------------|------------|-------------|------------|------------|
| | % < -2 SD | % < -3 SD | N | % < -2 SD | % < -3 SD | N | % < -2 SD | % < -3 SD | N |
| | TOTAL | 6.1 | 0.7 | 673 | 6.2 | 1.3 | 1768 | 4.6 | 0.4 |

Note. Weight-for-age: % below (<)-2 SD. N= number of children under age 5.

Figure 21: Prevalence of underweight (weight-for-age: % below -2 SD and 3 SD)



PREVALENCE OF WASTING

Low weight-for-height is defined as wasting. Children whose weight-for-height is more than two standard deviations below the median of the reference population are classified as moderately or severely wasted, while those who fall more than three standard deviations below the median are classified as severely wasted. Wasting is usually the result of a recent nutritional deficiency (MICS, 2015-16). The prevalence of wasting over time (2006, 2011, 2015-16) is presented in the following table and figure.

Table 31: Prevalence of wasting over time

| | 2006 | | | 2011 | | | 2015-16 | | |
|--------------|---------------|---------------|------------|---------------|---------------|-------------|---------------|---------------|-------------|
| | % BELOW -2 SD | % BELOW -3 SD | N | % BELOW -2 SD | % BELOW -3 SD | N | % BELOW -2 SD | % BELOW -2 SD | N |
| TOTAL | 1.4 | 0.2 | 673 | 3.3 | 1.2 | 1768 | 1.8 | 0.5 | 2397 |

Note. Weight-for-height: % below -2 SD

Figure 22: Prevalence of wasting (weight-for-height: % below -2 SD and 3 SD)

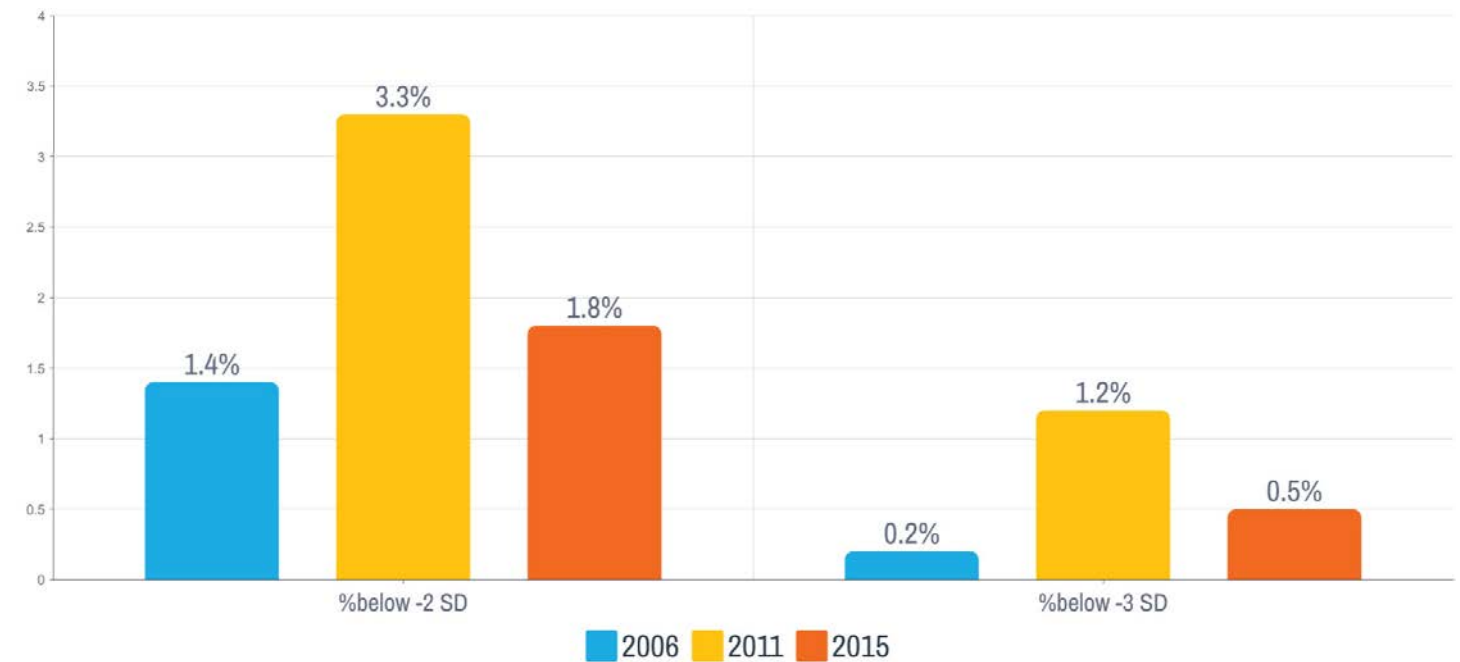


Table 32: WASH in Belize over the years (2006, 2011, 2015/16)

| WASH VARIABLES | 2006 | 2011 | 2015-16 |
|---|-------|-------|---------|
| Use of improved drinking water sources | 96.5% | 97.7% | 96.1% |
| Water treatment | 19.9% | 31.2% | 22.3% |
| Use of improved sanitation facilities | 93.7% | 89.2% | 87.1% |
| Safe disposal of child faeces | 33% | 25.6% | 16.4% |
| Water and soap available | N/A | 94.4% | N/A |
| Soap anywhere in dwelling | N/A | 93.2% | N/A |
| Place for handwashing | N/A | N/A | 90.4% |
| Availability of soap or other cleansing agent | N/A | N/A | 82.7% |

GENERAL INFORMATION STUDY 2

Caretakers: Sociodemographic information, context factors, different information about breastfeeding, complementary feeding, psychosocial factors, the BFHI MoH initiative and mental health was collected from n = 33 women and n = 5 Household members (partially from the same households as the interviewed women). Additional short interviews about breastfeeding and complementary feeding were collected from n = 7 women. All interviewees were caretakers (partial or main) to a child of 2 years or under.

Key Informant Interviews (KII): Sociodemographic information, estimated context factors, breastfeeding, complementary feeding, psychosocial factors, the BFHI MoH initiative, stakeholders and recommendations was collected from N = 11 key informants.

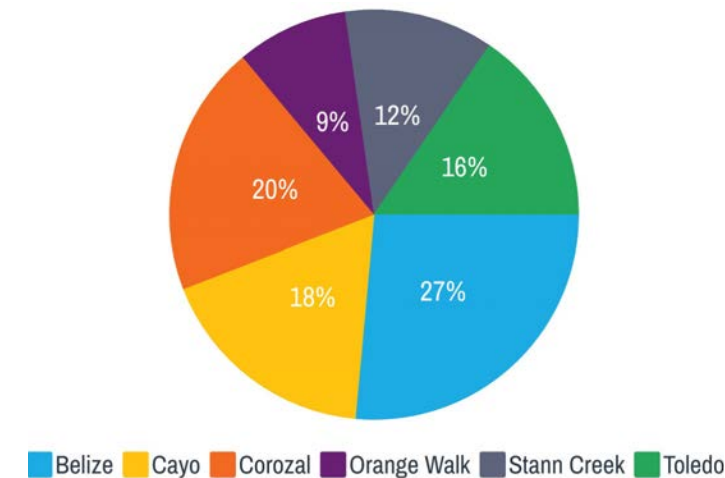
Focus Group Discussions (FGDs): N = 7 FGDs were realised, one in each district of Belize and two in Belize city. After signing an informed consent which was also explained to the participants, one to three key questions were posed to the group. After each question, participants were given time to brainstorm and note down their answers on cards. After everyone was ready, the cards were given to the consultant and explained. The consultant then ordered the cards into categories. The end result was discussed with the group and completed and revised. Each of the following questions has been asked at least once in a focus group:

- What could be influences for the healthy growth of babies?
- What could be causes for stunting in babies and little children, in your opinion?
- What do you consider the main issues of breastfeeding in Belize?
- What do you think are reasons / advantages for mothers to breastfeed exclusively?
- What do you think are reasons for mothers to not breastfeed exclusively?
- What could be disadvantages of breastfeeding?
- What do you think could be reasons for mothers to stop breastfeeding before the child is 2 years of age?
- What food would you give a baby once foods are given as a complement to breastfeeding or instead of breastfeeding?
- How does the gender of the baby make a difference in breastfeeding?

SOCIODEMOGRAPHIC INFORMATION STUDY 2

Caretakers: The total number of interviewees for this data set is N = 45 interviewees. Of these, 12 were done in Belize City, 9 in Corozal, 8 in Cayo, 7 in Toledo, 5 in Stann Creek and 4 in Orange Walk.

Figure 23: Caretaker interviewee percentages by district

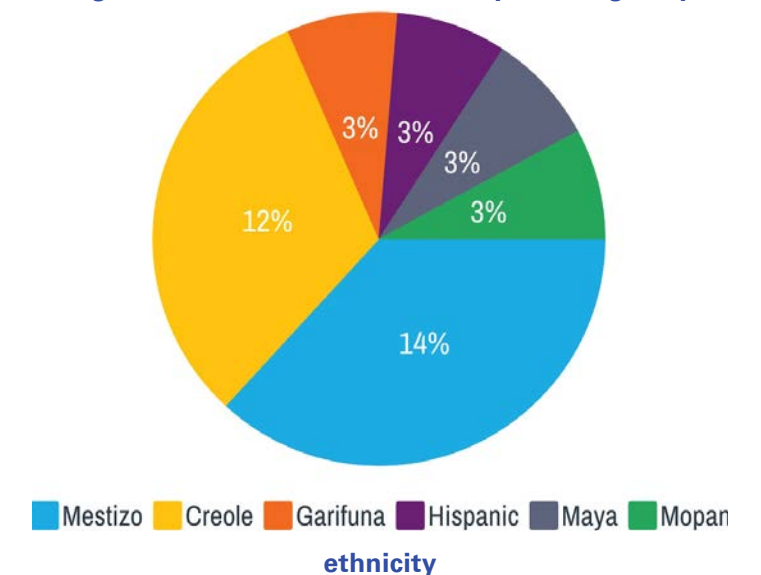


Overall, 56% of the interviews were done in rural areas and 44% in urban areas. 67% were held in English, 33% in Spanish. Average age of interviewees was m = 28 years. 3 of the respondents were male, the rest female. 2 of the female respondents were the grandmothers of the children under 2 years of age about whom the interview was held. Thus, 40 of the interviewees were mothers of the children in question (4 of these currently pregnant, so the child in question was the future child and it was asked about what the mothers were planning to do in terms of breastfeeding etc.). On average, interviewees had 1,8 children. Average age of the children about which the interview was held was 7 months. In 16 cases, the child in question was a boy (36%), in 19 cases a girl (42%), 3 pregnant women did not know the gender of the child yet (7%) and in 7 cases, the question was not asked or answered (16%). Respondents self-classified as Mestizo and Creole in majority (n = 14 and n = 12), 3

² Was not asked or did not answer

persons each as Mopan, Maya, Garifuna and Hispanic. 7 persons were not asked this question. Other ethnic groups of Belize are Mennonites, Caucasians, Europeans, Indians and Chinese; together, this accounts for about 6% of the population. However, we were not able to obtain interviews with these ethnic groups. In the case of Mennonites, we tried but failed due to language and cultural barriers.

Figure 24: Caretaker Interviewee percentages by ethnicity



In 38% of cases, one of the parents of the child in question is having an income, in 33%, both parents work. In 7%, someone else (mostly another family member) is financially supporting mother and child and in 4% (2 cases), no one is supporting the child with an income. In 18% (n = 8), this information is missing². 17 of the 37 mothers who answered this question (46%) have a job. In terms of education level, 38% of respondents state to have at least entered high school, 24% have a primary school education,

18% university or college level, 2% no education and 18% is missing. On average, m = 5 persons live in a household. In all cases, these were family members (children, parents, siblings, grandparents).

WASH situation: In 2 cases, the household did not have tap water available for the house. One household had a well, the other a deep pump. All other respondents (n = 35) had tap water available inside or right outside

of their house. Of these, n = 28 indicated to drink bought water (mostly in a gallon dispenser); the rest drinks tap water and in the 2 aforementioned cases, well and pump water.

27 respondents have access to a water toilet inside their home, 10 persons have pit toilets outside of their house. The information from 8 persons is missing.

KII: Average age of the N = 11 key informants is 42 years and all respondents are female. 5 respondents indicated having children, 4 not to have children and 2 did not answer the question. None of the respondents have children under 2 years of age. The following cultures are represented in the sample: Creole, Mestizo, East Indian, Garifuna, African Descendants. The following organisations are represented: Ministry of Health and Wellness, Western Regional Hospital, Institute of Nutrition for Central America and Panama (INCAP), CHR, PAHO, WFP, PowA, UN. The fields that key informants work in, are: (number of times named, multiple mentions possible, in brackets)

- Education for and promotion of BF (3)
- Overall women, maternal and child health and wellbeing (3)
- Development and implementation of strategies and policies that promote breastfeeding

- Nutrition education and promotion (2)

Average experience working in a field related to BF was m = 10 years. Four of the respondents indicated to have personal (additional to their professional) experience with BF.

FGDs: One FGD each was released in Independence, San Ignacio, Belmopan, Orange Walk and Corozal. Two were implemented in Belize City. On average, 7 people participated in the discussions (between 5 and 9), mainly women with little children, accompanying caretakers (male and female), nurses and hospital staff.

ADDITIONAL TABLES STUDY 2

Table 33: Numbers of answers (yes or no) to different breastfeeding indicators (after birth, EBF and continued BF)

| N | AFTER BIRTH | EBF | BF |
|---------|-------------|-----|----|
| no | 8 | 8 | 3 |
| yes | 28 | 37 | 42 |
| missing | 9 | 0 | 0 |

Table 34: Reasons for and benefits of BF, named by caretakers, KI and in FGDs

| REASONS FOR AND BENEFITS OF BF: | TIMES NAMED BY CARETAKERS: | TIMES NAMED BY KI: | TIMES NAMED IN FGDs: |
|--|----------------------------|--------------------|----------------------|
| Healthy baby, antibodies, strong immune system, prevents diseases and obesity | 63 | 15 | 7 |
| Baby develops better: stronger, better growth, chubby, beautiful, active, responsive, smarter, better digestion | 41 | 4 | 5 |
| Breastmilk is better (easier on the stomach, more practical, easier, more comfortable, more natural, soothing, calmer baby, more nutritious) | 35 | 5 | 1 |
| Cheaper, less expensive than formula, free, affordable | 17 | 9 | 5 |
| Bonding, love, connection | 17 | 5 | 3 |
| Better for the mother: Healthier mother, prevents cancer, hypertension, infections, depression; decreases bleeding, contracts the uterus; losing weight, regaining figure; the family and everyone does it (culture, custom) | 7 | 9 | 7 |
| Hospital / doctor advised / said so ("breast is best") / education and information provided by health care workers | 5 | 1 | |
| If time or work allows, during maternity leave | 3 | 2 | |
| Healthy community: Acceptance, support, brings people together, tradition, can make it fashionable | | | 1 |

Note: multiple answers possible to 2 questions by caretakers, one question for key informants, and asked in 3 FGDs with multiple answers possible.

Table 35: Reasons against and disadvantages of BF, named by caretakers, KI and in FGs

| REASONS AGAINST AND DISADVANTAGES OF BF | TIMES NAMED BY CARETAKERS: | TIMES NAMED BY KI: | TIMES NAMED IN FGDS: |
|---|----------------------------|--------------------|----------------------|
| Work (short maternity leave, pumping difficult, tiring, not allowed or not possible / no place) | 19 | 12 | 13 |
| When mother is sick or unhealthy (afraid of contagion / pass on sickness / medicine / surgery / smoking, drinking or eating unhealthy / complications / low blood pressure) | 21 | 5 | 16 |
| Lack of support (by the baby's father, the family, or hospitals) | | 7 | 29 |
| Breasts are affected: blisters, infection, swelling, pain, hanging, sagging, leaking, aesthetics, mastitis | 10 | 10 | 13 |
| Mother is depressed (PPD), stressed, tired / fed up (tough nights), has to share her body, loses too much weight / demanding on the body / finds BF difficult / it takes a toll on her body / BF needs patience / not confident in her skill | 9 | 7 | 16 |
| Milk dried up / not enough milk and no knowledge about how to increase production / breastmilk substitute is more filling | 9 | 4 | 17 |
| The baby needs more milk or needs food (is old enough / someone advised to give food) | 20 | | 4 |
| Cultural beliefs (e.g. in the Chinese community / BF for more than 1 year is bad for the mother or the child / child could get suffocated at night / shameful in public places / breasts are sexualised / BF is a practice of the poor / stigma / embarrassment / negative comments / bottle-feeding is in fashion) | 3 | 5 | 16 |
| The baby is too attached to the mother, too clingy & dependent, weaning or separation is difficult; breastmilk substitute is given so the baby can stay with others, not dependent on mother | 12 | | 11 |
| Baby is fussy, rough, bites, does not want the breast, does not latch | 9 | 1 | 6 |
| Breastmilk substitute is more convenient, less time-consuming than BF | 1 | 8 | 1 |
| Lack of education, not continuous for long enough, not knowing the benefits | | 5 | 3 |
| Domestic violence | | | 3 |
| Hygiene issues | 2 | | |
| Promotion of breastmilk substitute by private clinics and breastmilk substitute producers (marketing) | 1 | 1 | |
| Trauma from past BF experiences | | 1 | |

Note: Multiple answers to 3 questions for caretakers and to 3 questions for KI and to 4 questions in FGDs which were discussed a total of 7 times

5.4 MATERIALS

The following is a small selection of materials and photos from study 2. Please find a complete selection here:

<https://drive.google.com/drive/u/0/folders/1FP8qpXU0A0rWC0G>

Figure 25: Focus group discussions and example of result cards (photos taken by S. Palacios, Ranas, permission for use and publication confirmed with participants through informed consent)



Figure 26: Photos taken during interview situations (Photos taken by S. Palacios, Ranas, permission for use and publication confirmed with participants through informed consent)



5.5 QUESTIONNAIRES

All used questionnaires (women, household members, KII), the FGD guideline and raw data collected with these tools can be found until the end of 2023 here:

➔ https://1drv.ms/u/s!ArtAvjDKB2fdi_h1WwRx9BRhITlwcg?e=UIXNdc

In case you are not able to access it, please get in touch with the consultant at silvie.palacios@ranas.ch.

5.6 BIBLIOGRAPHY

- AlThuneyyan DA, AlGhamdi FF, AlZain RN, AlDhawyan ZS, Alhmly HF, PurayidathilTS, AlGindan YY and Abdullah AA (2022).** The Effect of Breastfeeding on Intelligence Quotient and Social Intelligence Among Seven- to Nine-Year-Old Girls: A Pilot Study. *Front. Nutr.* 9:726042. doi: 10.3389/fnut.2022.726042
- Amele, E. A., Demissie, B. Wondimeneh, Desta, K. W., & Woldemariam, E. B. (2019).** Prelacteal feeding practice and its associated factors among mothers of children age less than 24 months old in Southern Ethiopia. *Italian Journal of Pediatrics*, 45(1), 15. <https://doi.org/10.1186/s13052-019-0604> <https://doi.org/10.1186/s13052-019-0604-33>
- Amugsi, D. A. , Mittelmark, M. B. , & Oduro, A. (2015).** Association between maternal and child dietary diversity: An analysis of the Ghana demographic and health survey. *PLoS One*, 10(8), e0136748.
- Anstey EH, Shoemaker ML, Barrera CM, O'Neil ME, Verma AB, Holman DM.** Breastfeeding and Breast Cancer Risk Reduction: Implications for Black Mothers. *Am J Prev Med.* 2017 Sep;53(3S1):S40-S46. doi: 10.1016/j.amepre.2017.04.024. PMID: 28818244; PMCID: PMC6069526.
- Bandura, A. (1986).** Social foundations of thought and action: A social cognitive theory: Prentice-Hall, Inc.
- Becker, M. H., Drachman, R. H., & Kirscht, J. P. (1974).** A new approach to explaining sick-role behaviour in low-income populations. *American Journal of Public Health*, 64(3), 205-216.
- Bennett IM, Schott W, Krutikova S, Behrman JR.** Maternal mental health, and child growth and development, in four low-income and middle-income countries. *J Epidemiol Community Health.* 2016;70(2):168-173. doi:10.1136/jech-2014-205311
- Biran, A., Schmidt, W. P., Wright, R., Jones, T., Seshadri, M., Isaac, P., Granger, S. (2009).** The effect of a soap promotion and hygiene education campaign on handwashing behaviour in rural India: a cluster randomised trial. *Tropical Medicine & International Health*, 14(10), 1303-1314. doi:10.1111/j.1365-3156.2009.02373.x
- Black, R. E. , Victora, C. G. , Walker, S. P. , Bhutta, Z. A. , Christian, P. , de Onis, M. , ... Uauy, R. (2013).** Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890), 427–451.
- Bredenkamp C, Buisman LR, Van de Poel E.** Persistent inequalities in child undernutrition: evidence from 80 countries, from 1990 to today. *Int J Epidemiol.* 2014;43:1328–35.
- Burchi, F., Fanzo, J., & Frison, E. (2011).** The Role of Food and Nutrition System Approaches in Tackling Hidden Hunger. *International Journal of Environmental Research and Public Health*, 8(2), 358–373. <https://doi.org/10.3390/ijerph8020358>
- Chessa K Lutter, Camila M Chaparro, Laurence M Grummer-Strawn,** Increases in breastfeeding in Latin America and the Caribbean: an analysis of equity, *Health Policy and Planning*, Volume 26, Issue 3, May 2011, Pages 257–265, <https://doi.org/10.1093/heapol/czq046>
- CLTSH Implementation Guideline (2012).** Accessed at https://www.cmpethiopia.org/media/cltsh_implementation_guideline on the 30.12.2019.
- de Onis M, Frongillo EA, Blossner M.** Is malnutrition declining? An analysis of changes in levels of child malnutrition since 1980. *Bull WHO.* 2000; 78:1222–33.
- Dewey KG, Adu-Afarwuah S. 2008.** Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. In: *Maternal and Child Nutrition*. Davis, CA: Blackwell Publishing.
- Fisher S, Bellinger DC, Cropper ML, et al.** Air pollution and development in Africa: impacts on health, the economy, and human capital. *The Lancet Planetary Health.* 2021;5(10):e681-e688. doi:10.1016/S2542-5196(21)00201-1
- Frongillo EA, Jr, de Onis M, Hanson KM.** Socioeconomic and demographic factors are associated with worldwide patterns of stunting and wasting of children. *J Nutr.* 1997;127:2302–9.

- Gamma, A.E., Slekiene, J., Von Medeazza, G., Asplund, F., Cardoso, P. & Mosler, H.J. (2017).** Contextual and psychosocial factors predicting Ebola prevention behaviours using the RANAS approach to behaviour change in Guinea-Bissau. *BMC Public Health*, 2017; 17 (446). DOI 10.1186/s12889-017-4360-2
- Habicht J, DaVanzoJ, Butz WP.** Does breastfeeding really save lives, or are apparent benefits due to biases?, *American Journal of Epidemiology*, 1986, vol. 123 (pg. 279-90)
- Harpham T.** Maternal mental health and child nutritional status in four developing countries. *Journal of Epidemiology & Community Health.* 2005;59(12):1060-1064. 562 doi:10.1136/jech.2005.039180
- Hasan M, Islam MM, Mubarak E, Haque MA, Choudhury N, Ahmed T.** Mother's dietary diversity and association with stunting among children <2 years old in a low socio-economic environment: A case-control study in an urban care setting in Dhaka, Bangladesh. *Matern Child Nutr.* 2019 Apr;15(2):e12665. doi: 10.1111/mcn.12665. Epub 2018 Sep 14. PMID: 30216672; PMCID: PMC7199067.
- Hayes, A. F. (2017).** Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Guilford Publications.
- Hoque, B. A., Juncker, T., Sack, R., Ali, M., & Aziz, K. (1996).** Sustainability of a water, sanitation and hygiene education project in rural Bangladesh: a 5-year follow-up. *Bulletin of the World Health Organization*, 74(4), 431.
- Horta, BL, Loret de Mola C, Victora CG. (2015).** Long-term consequences of breastfeeding on cholesterol, obesity, systolic blood pressure and type 2 diabetes: a systematic review and metaanalysis. *Acta Paediatr*; 104(467): 30-7.
- Horta BL, Victora CG. (2013).** Short-term effects of breastfeeding. A systematic review on the benefits of breastfeeding on diarrhoea and pneumonia mortality World Health Organization.
- Jiang Q, Cohen N, Ohtori M, et al.** Postnatal Mental Health, Hand Washing Practices, and Infant
- Illness in Rural China.** *Front Glob Womens Health.* 2021;2:735264. doi:10.3389/fgwh.2021.735264
- Malta Health Promotion and Disease Prevention Directorate (2015).** National breastfeeding policy and action plan 2015 – 2020. Malta: Author.
- Marjorie P. & members of the Belize National Breastfeeding Policy Task Force (2019).**
- Martorell R, Zongrone A.** Intergenerational influences on child growth and undernutrition. *Paediatr Perinat Epidemiol.* 2012;26((suppl 1)):302–14.
- McDonald CM, Olofin I, Flaxman S, Fawzi WW, Spiegelman D, Caulfield LE, et al.** The effect of multiple anthropometric deficits on child mortality: meta-analysis of individual data in 10 prospective studies from developing countries. *Am J Clin Nutr.* 2013;97:896–901.
- MICS, 2015-2016.** Belize Multiple Indicator Cluster Survey, 2015-2016, Final Report. Belmopan, Belize: Statistical Institute of Belize and UNICEF Belize.
- Mosler, H-J. (2012).** A systematic approach to behaviour change interventions for the water and sanitation sector in developing countries: a conceptual model, a review, and a guideline. *International Journal of Environmental Health Research*, 22, 431-449.
- Mosler, H.-J., Contzen, N. (2016).** Systematic Behavior Change in Water Sanitation and Hygiene- A practical guide using the RANAS approach. Eawag, Dübendorf, Switzerland.
- Mosler, H.-J. & Slekiene, J. (2019).** Intervention Fact Sheet: Behaviour Change Interventions on Baby WASH Related Behaviours in Lao PDR. Zurich, Switzerland: Ranas Ltd.
- Nandy S, Irving M, Gordon D, Subramanian SV, Smith GD.** Poverty, child undernutrition and morbidity: new evidence from India. *Bull WHO.* 2005;83:210–16.

Ngure, F.M., Reid, B.M., Humphrey, J.H., Mbuya, M.N., Pelto, G., Stoltzfus, R.J. (2014). Water, sanitation, and hygiene (WASH), environmental enteropathy, nutrition, and early child development: making the links. *Annals of the New York Academic Sciences*. 1308:118-128.

Pérez-Escamilla R, Martinez JL, Segura-Pérez S. Impact of the Baby-friendly Hospital Initiative on breastfeeding and child health outcomes: a systematic review. *Matern Child Nutr*. 2016 Jul;12(3):402-17. doi: 10.1111/mcn.12294. Epub 2016 Feb 29. PMID: 26924775; PMCID: PMC6860129.

Prendergast AJ, Humphrey JH. The stunting syndrome in developing countries. *Paediatr Int Child Health*. 2014 Nov;34(4):250-65. doi: 10.1179/2046905514Y.0000000158. Epub 2014 Oct 13. PMID: 25310000; PMCID: PMC4232245.

Quinn VJ, Chiligo-Mpoma MO, Simler K, Milner J. The growth of Malawian preschool children from different socioeconomic groups. *Eur J Clin Nutr*. 1995;49:66–72.

Ranas Ltd. (2022). The RANAS Model of Behaviour Change. Methodological Fact Sheet 2. Zürich, Switzerland.

Ranas Ltd. (2022). RANAS Behaviour Change Techniques. Methodological Fact Sheet 4. Zürich, Switzerland.

Ranasinghe S, Ramesh S, Jacobsen KH. Hygiene and mental health among middle school 564 students in India and 11 other countries. *Journal of Infection and Public Health*. 565 2016;9(4):429-435. doi:10.1016/j.jiph.2015.11.007

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education & Behaviour*, 2(4), 328-335.

Santos, M.N., Azeredo, C.M. & Rinaldi, A.E.M. Association Between Maternal Work and Exclusive Breastfeeding in Countries of Latin America and Caribbean. *Matern Child Health J* 26, 1496–1506 (2022). <https://doi.org/10.1007/s10995-022-03390-w>

Shen T, Habicht JP, Chang Y. Effect of economic reforms on child growth in urban and rural areas of China. *N Engl J Med*. 1996;335:400–6.

Shrimpton R, Victora CG, de Onis M, Lima RC, Blossner M, Clugston G. Worldwide timing of growth faltering: implications for nutritional interventions. *Pediatrics*. 2001;107:E75.

Slekiene J, Mosler HJ. Does depression moderate handwashing in children? *BMC Public Health*. 2018;18(1):82. doi:10.1186/s12889-017-4638-4

Slekiene, J., & Mosler, H. (2018). Characterizing the Last Latrine Nonowners in Rural Malawi. *The American Journal of Tropical Medicine and Hygiene*, 98(1), 295-299. <https://doi.org/10.4269/ajtmh.17-0578>

Slekiene, J., & Mosler, H. J. (2019). The link between mental health and safe drinking water s in a vulnerable population in rural Malawi. *BMC Psychology*, 7(1), 1-14. <https://doi.org/10.1186/s40359> <https://doi.org/10.1186/s40359-019-0320-1019-0320-1>

Slekiene, J., & Mosler, H.-J. (2021). Does poor mental health change the influence of interventions on handwashing in a vulnerable population of rural Malawi? The key role of emotions. *Journal of Water, Sanitation and Hygiene for Development*, 11(3), 350–361. <https://doi.org/10.2166/washdev.2020.107>

Slekiene, J., Chase, C., Mishra, S., Mosler, H-J. (2022). Determination of psychosocial factors of Baby WASH related behaviors to design behavior change interventions in Lao PDR. The impact of mental well-being on behavioral outcomes [Manuscript submitted for publication]

The Government of Belize, Ministry of Health and Sports with the support of UNICEF (1998). Belize National Breastfeeding Policy.

Tschiederer, L, Seekircher, L, Kunutso, S, K, Peters, S, A, E, O’Keeffe, Linda, M & Willeit, P (2022): Breastfeeding Is Associated With a Reduced Maternal Cardiovascular Risk: Systematic Review and Meta-Analysis Involving Data From 8 Studies and 1 192 700 Parous Women. *American Heart Association*, 2022 (11). doi: 10.1161/JAHA.121.022746

UNICEF, MICS5 Tools (2022a). Available: <https://mics.unicef.org/tools> Accessed 3 Aug 2022.

UNICEF, MICS5 Tools: data processing (2022b). Available: <https://mics.unicef.org/tools?round=mics5#data-processing> Accessed 3 Aug 2022.

UNICEF/WHO (2017). Nurturing the health and wealth of nations: The investment case for breastfeeding. Geneva, Switzerland: UNICEF/WHO.

UNICEF (2019). Prevention of overweight and obesity in children and adolescents: UNICEF programming guidance, New York: UNICEF, 2019.

UNICEF. Tracking Progress on Child and Maternal Nutrition: A survival and development priority. UNICEF, 2009. Available from: http://www.unicef.org/publications/index_51656.html.

UN General Assembly, Transforming our world : the 2030 Agenda for Sustainable Development, 21 October 2015, A/RES/70/1, available at: <https://www.refworld.org/docid/57b6e3e44.html> accessed 3 August 2022.

Van der Gaag J. (2010). From Child Development to Human Development. In: Young M, ed. From Child Development to Human Development. Washington, DC: World Bank; 2010.

Venancio SI, Saldiva SR, Escuder MM, Giugliani ER. The Baby-Friendly Hospital Initiative shows positive effects on breastfeeding indicators in Brazil. *J Epidemiol Community Health*. 2012 Oct;66(10):914-8. doi: 10.1136/jech-2011-200332. Epub 2011 Nov 11. PMID: 22080818

Walters D, et al (2019). The cost of not breastfeeding: global results from a new tool, *Health Policy and Planning*, Volume 34, Issue 6, July 2019, Pages 407–417

WHO. (1994) A user’s guide to the self reporting questionnaire (SRQ). Geneva: World Health Organization; p. 1994.

World Health Organization (2021) Promoting proper feeding for infants and young children. Retrieved from: <https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding> World Health Organization (2014). Global nutrition targets 2025: Stunting policy brief.

World Health Organization. Implementing the Global Strategy for Infant and Young Child Feeding, meeting report, Geneva, 3–5 February 2003. Available from: <http://www.who.int/nutrition/publications/infantfeeding/924159120X/en/>

WHO/Unicef (2009). Baby-friendly hospital initiative : revised, updated and expanded for integrated care. Section 3, Breastfeeding promotion and support in a baby-friendly hospital: a 20-hour course for maternity staff. WHO Document Production Services, Geneva, Switzerland.

WHO/UNICEF NetCode (2018). New World Health Organization guidance helps protect breastfeeding as a human right. *Maternal & Child Nutrition*, 15, 1. Wiley Online Library. Retrieved from <https://onlinelibrary.wiley.com/doi/full/10.1111/mcn.12491>

World Health Organization and the United Nations Children’s Fund (UNICEF), 2022: How the marketing of formula milk influences our decisions on infant feeding. Geneva: World Health Organization and the United Nations Children’s Fund (UNICEF), 2022. Licence: CC BY-NC-SA 3.0 IGO.

World Health Organization (2008). Indicators for assessing infant and young child feeding practices: part 1: definitions: conclusions of a consensus meeting held 6-8 November 2007 in Washington DC, USA. Geneva: World Health Organization (WHO).

World Health Organization (1981). International code of marketing of breast-milk substitutes. Geneva: WHO.

World Health Organization, 2017. Available: <http://www.who.int/mentalhealth/management/depression/en/> Accessed 18 Dec 2017.

World Health Organization, 2022. Infant and young child feeding. Available: <https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding>. Accessed 7 Aug 2022.



5.7 MATERIALS FOR FINAL WORKSHOP

Please find **HERE**: The presentation of results, conclusions and recommendations.

Following, please find the impact – outcomes – outputs tables from the working groups:

1 TEEN MOTHERS:

IMPACT: Increase the acceptability of exclusive breastfeeding in teenage mothers by 30%

OUTCOME 1

- » Identify the population of teenage mothers from the larger population

OUTCOME 2

- » Include breastfeeding education in the Rural Health and Bachelorette Nursing program

OUTCOME 3

- » Reactivate the Focus/support groups for mothers

OUTPUTS

- » Conduct data analysis from the Q/I data, to identify % of teenage mothers in Belize.
- » Conduct national survey to identify the rate of breastfeeding among teenage mothers

OUTPUTS

- » Conduct sexual reproductive health education, including healthy breastfeeding practices and nutrition in primary and secondary school curriculum.
- » Revise Tertiary level curriculum to include Sexual and Reproductive health and nutrition

OUTPUTS

- » Conduct training to strengthen breast feeding and complimentary feeding for community health workers / focus / support groups
- » Conduct Education sessions with the new teenage mothers and include the nutritionists to educate/ counsel on the benefits of breast feeding and correct nutritional practices for the babies/mother
- » Re-introduce the primips workshops at the Polyclinics and Health-centers.

2 EXCLUSIVE BREASTFEEDING:

IMPACT: To reach 85% of mothers exclusive breastfeeding by year 2026

| OUTCOME 1 | OUTCOME 2 | OUTCOME 3 |
|---|--|---|
| <ul style="list-style-type: none"> » Increase maternity and paternity leave to six months | <ul style="list-style-type: none"> » Increase workplace support of breastfeeding | <ul style="list-style-type: none"> » Increase family support |
| OUTPUTS | OUTPUTS | OUTPUTS |
| <ul style="list-style-type: none"> » Liaise with government, private sectors and social security » Present results of studies done. » Follow up session lead by UNICEF » Have data to shows best practices of other countries | <ul style="list-style-type: none"> » Promote and enforce breastfeeding policy in the works place » Conduct breastfeeding workshops in communities » Increase public awareness on breastfeeding using billboards and community health fairs » Continuous adds using television and radio stations | <ul style="list-style-type: none"> » Through health education to families, especially fathers » Stress on benefits of breastfeeding 3.Home visits: » Home visits for the first week » (CHWs & nurses) once every week for the next 3 months (CHWs) » Encourage families to antenatal visits » Show ways of supporting breastfeeding |

3 EARLY INITIATION OF BREASTFEEDING:

IMPACT: Increase implementation of early initiation for successful breastfeeding process for recommended time period.

REASON: For families and health care team to know the importance of early initiation in order to support for successful breastfeeding outcome.

| OUTCOME 1 | OUTCOME 2 |
|--|---|
| <ul style="list-style-type: none"> » Increase knowledge of importance of early initiation for families and health care team | <ul style="list-style-type: none"> » Ensure and improve facilitation |
| OUTPUTS | OUTPUTS |
| <ul style="list-style-type: none"> » Continuous education for the families and health care workers » Field officers e.g. rovers, CHW and support personnel » Assisting the mother for breastfeeding technique | <ul style="list-style-type: none"> » Rooming in » One on one support with nurse and mother » Feeding on demand » Skin to skin |

4 COMPLEMENTARY FEEDING:

IMPACT: Healthy infants and families with improved nutrition.

| OUTCOME 1: | OUTCOME 2: | OUTCOME 3: |
|--|--|---|
| <ul style="list-style-type: none"> » Practices on complementary feeding strengthened. | <ul style="list-style-type: none"> » Knowledge on proper complementary feeding among the population increased. | <ul style="list-style-type: none"> » Awareness on the importance on adequate and on time complementary feeding strengthened. |
| OUTPUTS: | OUTPUTS: | OUTPUTS: |
| <ul style="list-style-type: none"> » Workshops for breastfeeding mothers on food preparation (complementary feeding). » Guides on recommended foods and foods to avoid in accordance to each month of age for mothers. | <ul style="list-style-type: none"> » Focus groups to identify gaps and relevant topics to develop. » Talks/presentation sessions for breastfeeding mothers at the primary healthcare facilities. | <ul style="list-style-type: none"> » Health promotion fairs in the community to sensitize the public on the importance of CF. » Comms material developed and distributed at primary healthcare facilities, tv channels, social media etc... |

5 COMMUNITY ROLE:

IMPACT: The increase in the community's acceptance, support and knowledge of breastfeeding practices within the next 4 years.

| OUTCOME 1 | OUTCOME 2 | OUTCOME 3 |
|---|--|---|
| <ul style="list-style-type: none"> » Increase the education within the community about breastfeeding practices and education | <ul style="list-style-type: none"> » Increase the support of persons within the community surrounding breastfeeding | <ul style="list-style-type: none"> » Increase acceptance towards breastfeeding |
| OUTPUTS | OUTPUTS | OUTPUTS |
| <ul style="list-style-type: none"> » Surveys within the community to establish level of understanding / misunderstanding » Advertisement: pamphlets, posters, banners, social media Simplified health talks at community meetings | <ul style="list-style-type: none"> » Support groups within the community before, during and after pregnancy for the entire family, emphasis on including the fathers. Lobby for extension of maternity and paternity leave and flexible lunch breaks. » Pairing first-time mothers and fathers with experience mothers who have encounter these challenges | <ul style="list-style-type: none"> » Education during pre-natal visits » Education through evidence based studies » Identify areas within the community where breastfeeding is a safe space. |

6 THE FATHER'S ROLE IN BREASTFEEDING:

IMPACT: Father's Psychological and Physical support during the first 1000 days

OUTCOME 1

- » Preconception, prenatal and post care

OUTCOME 2

- » Extension of parental leave (maternity & paternity leave)

OUTCOME 3

- » Reinstate the baby friendly initiative post covid

OUTPUTS

- » Education and awareness
- » Strengthen the services already available (Promotion)
- » Continuous M&E of the services
- » Formation of support and focus groups for men

OUTPUTS

- » Liaising with GOB entities and private companies

OUTPUTS

- » Revisit MOH policies and breastfeeding policies



For every child
Whoever she is.
Wherever he lives.
Every child deserves a childhood.
A future.
A fair chance.
That's why UNICEF is there.
For each and every child.
Working day in and day out.
In more than 190 countries and territories.
Reaching the hardest to reach.
The furthest from help.
The most excluded.
It's why we stay to the end.
And never give up.

UNICEF Belize
#1 Coney Drive, Gordon House, 3rd Floor
Belize City,
Belize

 belize@unicef.org

 www.unicef.org/belize

 facebook.com/UNICEFbelize

 twitter.com/unicefbelize

 instagram.com/unicefbelize/

 tiktok.com/@unicefbze