

Assessment of Promotion and Intake of Foods Consumed by Infants and Young Children in Senegal:

Senegal Country Report

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Assessment and Research in Child Feeding (ARCH)

Table of Contents

Summary.....	iv
Acknowledgements	vi
1 Introduction	1
2 Materials and Methods.....	2
2.1 Research objectives.....	2
2.1.1 Definitions	3
2.2 Research design and study population	4
2.3 Sample size.....	5
2.4 Sampling procedure and data collection	5
2.5 Questionnaire design	9
2.6 Statistical analyses	10
3 Results – Mothers interviewed at discharge after delivery	10
3.1 Demographics and socio-economic characteristics	10
3.2 Antenatal care and delivery practices.....	11
3.3 Educational messages about infant and young child feeding (IYCF).....	12
3.4 Infant feeding practices prior to discharge	12
3.5 Promotion of BMS and CPCF within health facilities	13
3.6 Promotion of BMS, CPCF and snack foods outside health facilities.....	14
4 Results - Mothers of children <24 months of age.....	17
4.1 Demographics and socio-economic characteristics	17
4.2 Antenatal care (ANC) and delivery practices	19
4.3 Promotion of BMS and CPCF within health facilities	20
4.4 Promotion of BMS, CPCF and snack foods outside health facilities.....	21
4.5 Educational messages about infant and young child feeding (IYCF).....	23
4.6 Current breastfeeding practices.....	24
4.7 Complementary feeding practices among children 6-23 months.....	26
4.8 Consumption of homemade complementary foods and family foods	29
4.9 Consumption of CPCF	30
4.10 Consumption of commercially produced foods for general consumption commonly fed to children less than 2 years of age	32
4.11 Maternal aspirations for feeding additional foods	33
5 Discussion	35
6 Recommendations.....	37
References	39

List of Tables

Table 2.1 Questionnaire topic sections comparing discharge and <24 month samples	9
Table 3.1 Demographic and socio-economic characteristics of mothers at discharge (n=288)	11
Table 3.2 Percentage of mothers exposed to promotions of BMS and CPCF within health facilities (n=288)	14
Table 4.1 Demographic and socio-economic characteristics of mothers of children <24 months of age	18
Table 4.2 Percentage of mothers breastfeeding and bottle-feeding (n=293)	24
Table 4.3 Percentage of children 6-23 months of age meeting the minimal complementary feeding indicators (n=218)	26
Table 4.4 Percentage of children 6-23 months of age consuming beverages on the preceding day (n=218)	27
Table 4.5 Percentage of children 6-23 months of age consuming semi-solid foods on the preceding day (n=218) ...	28

List of Figures

Figure 2.1 Sampling of health facilities and mothers for discharge and child health facilities	8
Figure 3.1 Percentage of infants who received pre-lacteal feeds by type of delivery	13
Figure 3.2 Percentage of mothers who reported having heard, seen or read a promotion for BMS and/or CPCF	15
Figure 3.3 Percentage of mothers who reported having heard, seen or read a promotion for a commercially produced snack food product or soft drink for general consumption (n=288)	16
Figure 4.1 Percent of children in non-mother care who were fed, played with or bathed by caregiver, by child age	19
Figure 4.2 Percentage of mothers who reported having heard, seen or read a promotion of BMS outside of health facilities by age of the child (n=293)	22
Figure 4.3 Percentage of mothers who reported having heard, seen or read a promotion of BMS or CPCF (n=293)	22
Figure 4.4 Percentage of mothers who reported having heard, seen or read a promotion of commercially produced foods for general consumption commonly fed to children less than two years (n=293)	23
Figure 4.5 Percentage of infants <6 months of age who consumed liquids/foods other than breastmilk on the preceding day (n=75)	25
Figure 4.6 Percentage of 6-23 months children who ate different types of CPCF on the preceding day (n=218)	31
Figure 4.7 Percentage of children 6-23 months of age who consumed commercially produced snack food products or soft drinks for general consumption in the last week and previous day (n=218)	32
Figure 4.8 Percentage of children 6-23 months of age consuming commercially produced snack food products or soft drinks for general consumption in the last week by frequency of consumption (n=218)	33
Figure 4.9 Percentage of mothers of children 6-23 mo of age who reported they would feed their children other foods if they had enough money (n=204)	34
Figure 4.10 Percentage of mothers of children 6-23 months of age reporting reasons for wanting to buy and feed additional foods to their child.	35

List of Abbreviations

ANC	Antenatal care
ARCH	Assessment and Research on Child Feeding
BFHI	Baby-friendly Hospital Initiative
BMS	Breast-milk substitute
CPCF	Commercially produced complementary food
CPF	Commercially produced food for general consumption commonly fed to children less than two years of age
DHS	Demographic and Health Survey
HKI	Helen Keller International
IBFAN	International Baby Food Action Network
IGBM	Interagency Group on Breastfeeding Monitoring
IYC	Infant and young child
IYCF	Infant and young child feeding
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Summary

In 1994, legislation in Senegal restricted the marketing of breast-milk substitutes (BMS), including products, foods, or liquids used or presented as products for partial or complete replacement of breastmilk *within health facilities associated with the Ministry of Health and Social Action* (Article 3 of Arrêté 005969 of 25 July 1994). There are no restrictions on the marketing of these products outside health facilities associated with the Ministry of Health and Social Action.

Helen Keller International's Assessment and Research on Child Feeding (ARCH) project implemented a study to assess advice provided to mothers by health professionals and the promotion of commercially produced infant and young child food products and commercially produced foods for general consumption, both inside and outside the health system of Dakar Department, Senegal. Interviews with mothers at discharge after delivery allowed for the assessment of exposure to promotion during pregnancy and delivery, while interviews with mothers of children <24 months attending child health clinics assessed exposure to promotion from the birth of the youngest child onwards, and documented dietary intake. This was a public health facility-based, cross-sectional survey conducted amongst 288 mothers being discharged after delivery and 293 mothers of children <24 months of age who utilized child health services.

Less than 20% of mothers in both study groups received breastfeeding information during antenatal care. Few mothers at discharge and mothers of children <24 months of age reported having seen educational messages or information on infant and young child feeding on television or in health facilities (4.9% and 31.1%; 3.8% and 16.7%, respectively). Eight percent of mothers at discharge and 21% of mothers of children <24 months of age reported that they had received a recommendation from a health worker to use a BMS. Less than 5% of mothers in both study groups reported seeing a promotion for BMS within the health facility, however nearly 20% of mothers in both groups observed BMS or CPCF branding or logos on health facility equipment. Senegalese legislation prohibits any form of advertising for BMS in health facilities.

Commercial promotion for BMS outside health facilities was common with 37.8% of discharge mothers and 38.9% of mothers of children <24 months of age having seen advertisements on television. Among discharge mothers, 18.8% saw BMS promotions in a shop/pharmacy, and 6.6% on billboards. Other sources of BMS promotion (internet, magazine/newspaper, radio, through the mail, or on a truck) were reported by less than 2% of mothers. Among mothers of children <24 months of age, less than 12% observed BMS advertising in shops/ pharmacies, billboards, internet or radio. Advertising on television for CPCFs was more common than BMS, observed by 48.3% and 37.2%, discharge and mothers of children <24 months of age respectively. Promotions of commercially produced snack food products for general consumption were highly prevalent, with 83.0% and 93.5% of mothers, respectively, having heard, seen or read such a promotion.

While all mothers reported having breastfed their child <24 months of age, 22% of discharge mothers had not yet put the baby to breast by the time they were discharged, with many being discharged the same day as the delivery. Early initiation of breastfeeding was low, with 4.9% of discharge mothers breastfeeding their newborn within the first hour after delivery. Among discharge mothers, 35.1% fed pre-lacteal feeds in the first three days after delivery of their newborn. Among

mothers of children <6 months of age, 33.3% were exclusively breastfeeding. Infant formula was given to 12.5% of discharge infants and 10.7% of infants <6 months of age.

While the rate of caesarian-section deliveries was low at 13.5% for both populations; discharge mothers who delivered this way were much more likely (74.4%) to have given infant formula as a pre-lacteal feed compared to other women (2.8%)($p=.000$).

Of children 6-23 months of age, 50.5% had consumed a homemade complementary food and 49.1% had consumed a CPCF on the previous day, and 61.0% ate a commercially produced snack food product for general consumption.

Among infants and young children 6-23 months, minimum dietary diversity, defined as the consumption of at least 4 of 7 food categories in the previous day, was met by 47.2% and minimum meal frequency, defined as a child consuming food the minimum number of times or more in the previous day (with the minimum depending on their age and breastfeeding status), was met by 50.5% of infants. A minimum acceptable diet, defined as the combination of these two indicators, was achieved by just 31.7% of infants and children 6-23 months of age.

Infants and children 6-23 months of age tended to consume commercially produced snack food products for general consumption regularly, with nearly half (48.2%) eating chips/crisps or other savory snacks (e.g. salted biscuits), 24.8% sweet biscuits or cookies and 25.7% candy, chocolate or sweets. Nearly two-thirds of mothers (62.8%) of children 6-23 months of age reported adding sugar or honey to either a food or a liquid consumed by their child the previous day.

These findings point to a number of concerns and the need for improvements in infant and young child feeding (IYCF) practices in Senegal, including controlling the inappropriate marketing of BMS, (including follow-up formula and growing-up milks); increasing support for breastfeeding within health facilities and; improving complementary feeding. This is especially important considering that Senegal is a signatory of the Scaling up Nutrition (SUN) Movement and has committed to improving IYCF.

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1 Introduction

Exclusive breastfeeding for the first six months of life with continued breastfeeding up to two years of age or beyond is the optimal course of feeding for infants and young children (WHO and UNICEF, 2003). A child's nutritional needs increase around the age of six months; therefore, it becomes necessary to introduce appropriate complementary foods in a timely, safe and adequate manner, while continuing to breastfeed. This period commonly corresponds to growth faltering in young children, and is an important focus area for preventing future childhood malnutrition (Shrimpton et al. 2001).

Despite an increasing focus on children's health and nutrition in the last decade, 27% of Senegalese children less than five years of age are stunted and 71% are anemic (ANSD, 2012). Breastfeeding is widely practiced in Senegal, with 98% of children ever breastfed. Continued breastfeeding at the age of one year is also high, at 97%. However, rates of exclusive breastfeeding (which is associated with reduced morbidity and mortality) are low; 39% of Senegalese children less than six months of age are exclusively breastfed. National data also indicate sub-optimal complementary feeding practices, which can adversely impact child growth and development. Only 10% of breastfed children and 2% of non-breastfed children between 6-23 months of age met the minimum standard with respect to three infant and young child feeding indicators (adequate feeding frequency, minimum dietary diversity, and consumption of breast milk/other milks)(ANSD, 2012).

Breast-milk substitutes (BMS), including infant formula, follow-up formula and growing-up/toddler milks, are potentially detrimental to child health since they can displace breastfeeding in the diets of infants and young children. In response to unethical marketing activities by infant formula manufacturers and distributors, the World Health Assembly (WHA) in 1981 passed a resolution adopting the International Code of Marketing of Breastmilk Substitutes (commonly referred to as 'the Code') (WHO, 1981). Subsequent WHA resolutions have clarified aspects of the Code and addressed emerging product and marketing issues. Senegal's 1994 'Inter-ministerial Decree Establishing the Conditions for Marketing Breast-milk Substitutes' includes explicit provisions prohibiting the distribution, promotion, advertising, or idealizing representations of BMS (including products, foods, or liquids used or presented as products for partial or complete replacement of breastmilk) within the health facilities associated with the Ministry of Health and Social Action. The Inter-Ministerial Decree does not place restrictions on the marketing of these products outside of these facilities.

Article L.511: 94-57 of the Public Health Code in Senegal (JORS,25-5-1968,590-591) contains a definition of products to be defined as drugs, which includes a category for 'dietary products', under which BMS fall. This definition has been interpreted in Senegal to apply to BMS for children 0-12 months of age, which is consistent with the age category referred to in the 1994 Inter-ministerial Decree. Infant formulas (for infants 0-6 months of age) and follow-up formulas (6-12 months) are thus considered to be drug products, and may only be sold in pharmacies in Senegal. Growing-up milks (for children 12 months of age and older) and CPCFs are not included, and may be sold at other retail outlets.

Marketing of CPCFs, if not represented as a total or partial replacement for breastmilk, is not regulated by Senegalese legislation, nor is the marketing of other foods commonly fed to children

under the age of 2 years in Senegal, including many snack foods. CPCF can contribute to the improved nutritional status of children between 6 and 23 months if they are appropriately formulated. However, other commercially produced snack foods may be detrimental to the optimal feeding of children aged 6-23 months by potentially increasing the consumption of foods high in salt or sugar, displacing the consumption of other more nutritious options. Research shows that urban families in Dakar have been increasing their utilization of street foods and commercially produced snacks, with less reliance on home-prepared meals. This could have a negative impact on the diets and nutrient intake of young children (Fiorentino et al, 2013).

Understanding the types of promotion taking place and what messages mothers in Dakar receive from within health facilities and from the private sector, pertaining to infant and young child feeding, is necessary in order to understand what positive messages should be reinforced and which messages should be discouraged in the interest of ensuring optimal infant and young child feeding practices.

As part of the Assessment and Research on Child Feeding (ARCH) Project, Helen Keller International (HKI) has gathered information on the labelling and point-of-sale promotion of commercially produced foods and beverages commonly consumed by infants and young children in Senegal and three other countries (Cambodia, Nepal, and Tanzania). Additionally, presented herein, research has been conducted on mothers' exposure to commercial promotions for infant and young child food products, and their utilization of these products in the same four countries. This report discusses this study conducted in Dakar, Senegal in 2014.

2 Materials and Methods

2.1 Research objectives

This study was conducted among mothers utilizing non-private health facilities in urban areas of Dakar Department in Dakar Region, Senegal. While building upon Interagency Group on Breastfeeding Monitoring (IGBM) methods along with added components for demographic information and consumption measurement similar to the Demographic and Health Surveys (DHS) in Senegal (ANSD, 2012), this study sought to gather additional information on mothers' exposure to promotions of foods and beverages for infants/young children from 6-23 months. Finally, while 13 surveys in sub-Saharan Africa have gathered information on consumption of 'sugary snack' foods (Huffman et al, 2014), this was not measured in the Senegal DHS. Consequently, this study gathered consumption data on a range of commercially produced foods for general consumption that are commonly fed to children aged between 6-23 months, including various snack food products.

The primary objectives of the study were to:

- Estimate the prevalence of promotional practices occurring within health facilities for BMS (including infant formula, follow-on formula, and growing-up/toddler milks).
- Estimate the prevalence of promotional practices occurring within health facilities for complementary foods (including advice on home-prepared and commercially produced complementary foods (CPCF)) and supplements for infants and young children.

- Document breastfeeding support and complementary feeding guidance provided in health facilities.

The secondary objectives of the study were to:

- Document the consumption by infants and young children between 6 and 23 months of breast milk, BMS, complementary foods (both home-prepared foods and CPCF), supplements, and commercially produced foods for general consumption commonly fed to children younger than 2 years of age.
- Document the exposure to the promotion of commercially produced food products occurring outside health facilities.

2.1.1 Definitions

This study uses the following definitions for the categories of food under observation:

Breast-Milk Substitutes (BMS): Includes infant/starter formula (to be used from birth up to six months of age), follow-up formula (to be used from 6 months to 12 months), and other milk or milk-like products (in liquid or powdered form) marketed or otherwise represented as suitable for feeding children younger than two years of age, including growing-up milk and toddler milks, but excludes other beverages and foods marketed or otherwise represented as a partial or total replacement for breast milk.

Commercially Produced Complementary Foods (CPCF): Any commercially produced food or beverage product, excluding BMS, that contains a label indicating the product is intended for children younger than two years of age. In this study commercially produced complementary foods include cereal/porridge, homogenized/pureed food, snacks/finger food, gravy/soup, tea/water/juice.

Commercially produced foods for general consumption commonly fed to children under the age of two years (CPF): Foods commonly fed to, but not marketed specifically for, children younger than two years of age e.g. soda/carbonated beverages, 100% juice/juice drinks, bottled water, condensed milk/evaporated milk, chocolate/milk beverages, biscuits/cookies, savory snacks (chips, crisps), sweet snacks (cakes/doughnuts and candy/sweets/chocolate), processed cereals (e.g. maize/millet meal), breakfast cereals, instant noodles and peanut butter.

Commercially produced snack food products: Commercially produced foods typically eaten between meals. Savory snacks include fried chips, crisps or salted biscuits. Sugary snacks include chocolates, sweets, candies pastries, cakes or sweet biscuits.

Health facility: Only health facilities associated with the Ministry of Health and Social Action which for the purposes of this study included public/faith-based/NGO (non-private) health facilities offering delivery and/or child health services in Dakar Department, were included in the study. Therefore all private health facilities were excluded.

Marketing: Defined by Article 3 of the International Code of Marketing of Breast Milk Substitutes (the Code) as distribution, selling, product promotion, advertising, product public relations, and information services (WHO, 1981). With regards to the Code, the distribution and selling of designated products is allowed.

Promotion: Marketing techniques to increase sales (advertising, sampling, or any other activity to encourage or induce the purchase of a product) (IBFAN, 2007). Promotion is a type of marketing activity. With regards to the Code, the promotion of designated products is not allowed. Examples of promotion techniques include discounts, coupons, gifts, samples and adverts. The WHO Scientific and Technical Advisory Group on Inappropriate Promotion of Foods for Infants and Young Children defines it as ‘the communication of messages that are designed to persuade or encourage the purchase and consumption of a product or raise awareness of a brand. Promotional messages may be communicated via mass communication channels and other marketing media using a variety of marketing techniques.’ (WHO, 2013).

2.2 Research design and study population

This was a representative cross-sectional survey of mothers of children under 24 months of age utilizing government health facilities in Dakar Department in Dakar Region. The study was limited to only mothers and did not include other caregivers of infants and young children since breastfeeding practices were assessed. Data were collected through structured interviews using two questionnaires for two separate study populations: 1) mothers who had just been discharged from a maternity ward after delivery and 2) mothers of children less than 24 months of age who were utilizing child health clinics at a facility. The former study population was interviewed regarding experiences and practices during their pregnancy or since the recent delivery of their newborn, while the latter study population was asked to recall experiences and practices since the birth of their youngest child less than 24 months of age. Data collection took place between April and June 2014.

The study populations included in this survey were limited to mothers currently living in and utilizing health facilities within Dakar, defined as the geographical area within the limits of urban areas of the Dakar Department of the Dakar Region. Mothers living outside of Dakar Department, but utilizing delivery or child health services in the Department, were excluded from participating in the survey. Additionally, mothers with any of the following characteristics were excluded because these conditions are known to delay breastfeeding initiation:

- Mothers of infants/young children with congenital diseases or who were in the neonatal intensive care unit (NICU).
- Mothers who experienced severe delivery complications during the birth of their newborn/youngest child.
- Mothers whose newborn/youngest child is from a multiple birth.
- Mothers of children who were too ill for interview.

2.3 Sample size

In their studies of caregivers, Taylor (1998), IGBM/UNICEF (2005), and Save the Children and Gallup Pakistan (2013) interviewed 800 women (400 pregnant and 400 with children less than 6 months of age) in each site (often in capital cities). Other studies have had much smaller sample sizes ranging from 50 to 300 caregivers (Aguayo et al, 2003; Hamilton, 2002; Sobel et al, 2011; Perez-Escamilla, 2004; Babak et al, 2004; and Haiek, 2012). The Baby Friendly Hospital Initiative (BFHI) self-assessment tool that assists health systems assess practices around breastfeeding support (Brownlee, 2009) suggests collecting 30 interviews with mothers in one month in each health facility and report BFHI compliance if 80% of mothers respond in the affirmative to questions related to the BFHI global criterion. The IGBM and UNICEF (2005) methodology uses 800 women with infants <6 months of age because “the sampling of 800 women gives a 95% power to observe at least one reported violation if the true prevalence is 2%. If the prevalence is 10%, the sample size generates an estimate of population prevalence with a standard error of 1%.” Due to the high cost of collecting such a large sample size, and the desire to develop a methodology that could be replicated in subsequent years on a regular basis by local governments and interested stakeholders, a higher standard error was used in this study.

The sample size for this study was calculated to detect a 10% prevalence rate of exposure to promotions within the health system, with a measurement error of $\pm 5\%$. Using a standard of error of 0.0255 and assuming a design effect of 2 to account for the cluster design, a sample size of 280 for mothers at discharge and 280 for mothers of children less than 24 months of age was considered adequate. Due to the cluster sampling design utilized (described below), the final sample size was slightly higher than 280.

2.4 Sampling procedure and data collection

Lists of all public/faith-based/NGO (non-private) health facilities (from now on referred to as health facilities) offering delivery and/or child health services in Dakar were obtained from the National Information Service for Health's database. This included national hospitals, referral hospitals, and health centers but excluded health posts. Utilization rates for these facilities were also available, including total number of deliveries and/or number of child health visits, including those in outpatient departments and immunization clinics. The rates were then calculated as the monthly average per facility; for example, if annual data were obtained, the rates were divided by 12 months. Private facilities were not included because their utilization rates according to the most recent DHS (2010-2011) were very low (10.5% in Dakar) and would have been logistically difficult to obtain.

Public/faith-based/ NGO health facilities were sampled by allocating clusters using probability proportional to size (PPS). The calculated monthly utilization rates served as each facility's 'population'. Facilities for mothers discharged after delivery and facilities for mothers of children <24 months of age were sampled separately, however where facilities offered both delivery and child health services they were included in both sampling frames.

Due to logistics and the need to complete data collection within 8-10 weeks, facilities with less than 50 deliveries/child health visits per month were excluded from the sampling frame. This excluded 9 out of 23 public/faith-based/NGO facilities for delivery, but the 14 included in the sampling frame

represented 88.5% of all facility-based births in Dakar Department. For facilities with child health services, this excluded 26 out of 81 child health facilities, but the 55 included in the sampling frame represented 97.6% of all child health visits in Dakar Department health facilities.

Clusters of 16 mothers each were assigned across facilities in the sampling frame; the total of 16 mothers per cluster was chosen to allow for even distribution of child ages across 4 age categories (0-5.9; 6-11.9; 12-17.9; and 18-23.9 months); 18 clusters were sampled in each sampling frame (discharge and < 24 month health facilities). Because sampling of facilities was proportional to size, larger facilities had a greater chance of being sampled for multiple clusters, while smaller facilities had a greater chance of being sampled for only one cluster. Figure 2.1 details the sampling of facilities and mothers for each study group across the public health facilities.

Prior to being assigned to an enumerator, all mothers in maternity wards and child outpatient/immunization services were first screened against the exclusion criteria by on-site survey supervisors in order to save time for both mothers and enumerators. For discharge mothers, survey supervisors screened women who were identified as ready for discharge by health facility staff to determine if they were residents of Dakar Department and thus eligible for inclusion. For mothers of children under 24 months of age, survey supervisors approached women in child outpatient/immunization clinic areas and assessed if they were residents of Dakar Department and if their youngest child was under 24 months of age. In both study populations, eligible mothers were then assigned to an enumerator for the interview.

A total of 347 mothers at discharge after delivery were approached for interview. Of these, 46 (13.3%) mothers were excluded from the study based on one or more of the exclusion criteria: 30 mothers resided outside of Dakar, 8 mothers' newborns were from a multiple birth, 6 mothers experienced severe complications during the delivery of their youngest child, 5 children were put in the NICU after delivery, and 1 child was too ill for interview. Thirteen (3.7%) mothers refused participation in the study. The final sample of mothers included for interview was 288.

A total of 389 mothers with children under 24 months of age were approached for interview. Of these, 52 (13.4%) mothers were excluded from the study based on one or more of the exclusion criteria: 47 mothers resided outside of Dakar, 3 women interviewed were not the mother of the child, 1 mother's youngest child was from a multiple birth, and 1 child was put in the NICU after delivery. Forty-four (11.3%) mothers refused participation in the study. The final sample of mothers included for interview in the study was 293.

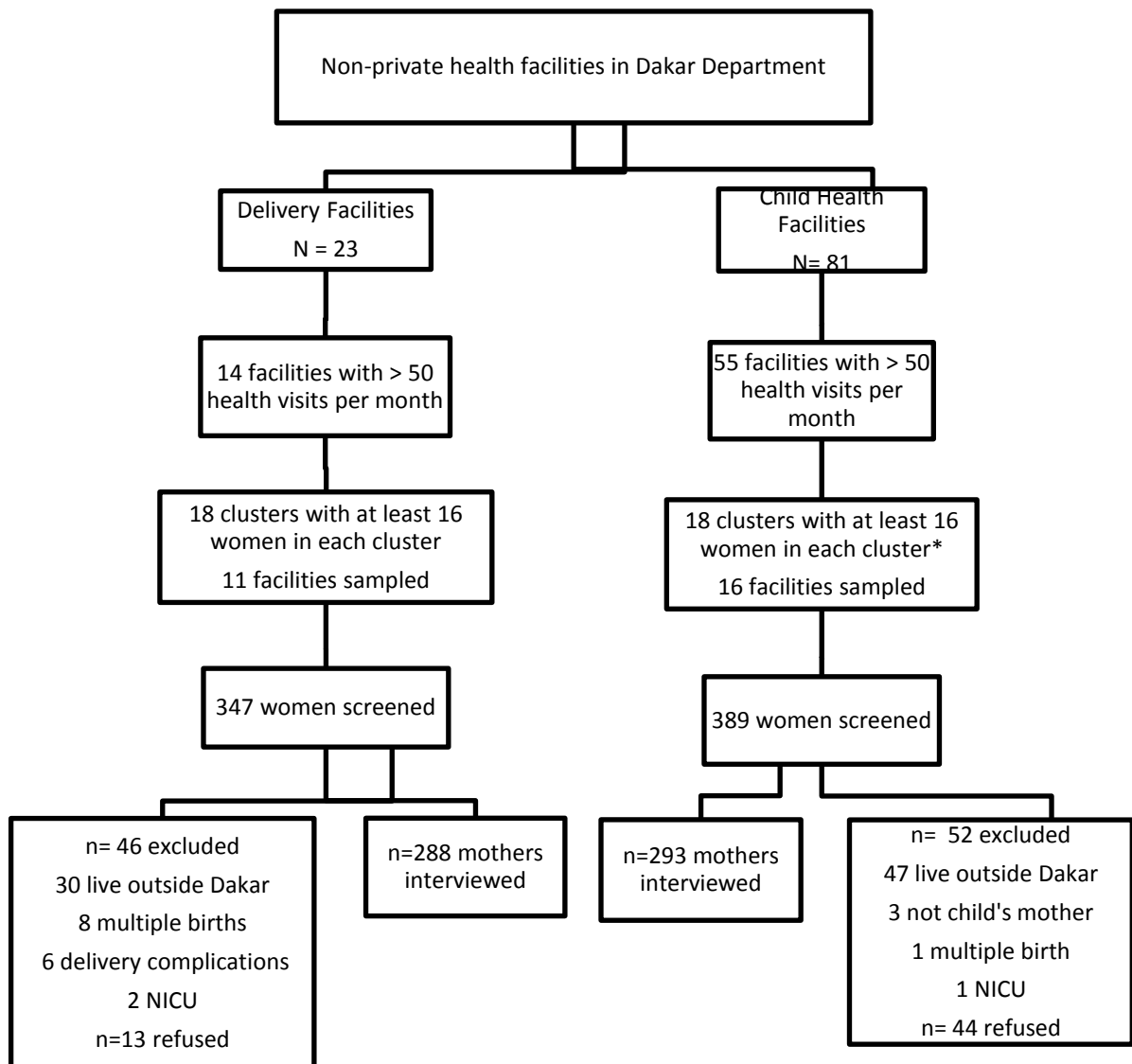
Two sampling procedures were utilized for the two study groups. In both cases, sampling of mothers was exhaustive in order to maximize the number of interviews completed per day and to ensure data collection completion within the required timeframe:

Mothers at discharge: Sampled facilities were alerted of data collection approximately one week prior to survey. Survey supervisors worked closely with nurses-in-charge to identify those mothers for discharge, and enumerators interviewed mothers after they had completed the discharge procedure and paperwork. Interviews continued until all mothers scheduled for discharge that day had been interviewed, or until the sample number for the facility in question had been reached.

Mothers with children under 24 months: Sampled facilities were alerted of data collection approximately one week prior to survey. Women with children at clinics offering child health services (immunization or Out Patient Department) at a sampled health facility were assessed and approached for interview by survey supervisors. Survey supervisors screened every woman with a child who passed through the entrance/exit point of the child health clinic area and assessed the age of the child to verify if an interview was still needed for the specific age category.

Approval for this study was obtained from Senegal's National Ethic Committee for Research in Health on March 10th 2014, prior to data collection. Informed consent was obtained from all participants prior to the interview being conducted.

Figure 2.1 Sampling of health facilities and mothers for discharge and child health facilities



*In a limited number of facilities, additional children were recruited to fulfill necessary age ranges due to the recalculation of ages by SPSS that resulted in slight changes in the age of the child compared to calculations made in the field.

2.5 Questionnaire design

Two questionnaires were developed to obtain data from mothers at discharge after delivery and mothers with children <24 months of age utilizing child health services. Details of the questionnaire sections are shown in Table 2.1. Both questionnaires collected data on the mothers', including age, marital status, educational attainment, household assets, drinking water source and details regarding antenatal care and delivery of their youngest child. Data was also collected pertaining to the youngest child and included age, gender, and birth order. Data on pre-lacteal feeding, breastfeeding practices for the newborn/youngest child were collected from both study populations, and current complementary feeding practices were collected from mothers with children <24 months of age. Data to assess infant and young child feeding practices were gathered in accordance with the WHO guidelines on IYCF practices (WHO, 2008).

Both questionnaires asked mothers to report on promotional practices experienced inside and outside the health facilities, for both BMS and CPCF. Mothers at discharge were asked to recall exposure experienced during pregnancy and after delivery of their newborn, while mothers of children <24 months were asked to recall promotional exposure only after the birth of their youngest child. Finally, mothers of children <24 months of age were asked to report dietary information for this child. Standardized questionnaires were used to obtain information on which foods and beverages were consumed by the youngest child on the day and night prior to the day of interview. Additionally, data were gathered on the weekly frequency of consumption, reasons for feeding, and expenditure on home-prepared complementary foods and commercially produced snacks commonly fed to children under 2 years of age, as well as the types of foods mothers aspired to feed their youngest child and associated reasons.

Table 2.1 Questionnaire topic sections comparing discharge and <24 month samples

Section	Discharge	24 Month
Mother characteristics	X	X
Child characteristics	X	X
Childcare practices		X
Breastfeeding practices	X	X
Infant feeding in last 24 hours		X
Infant feeding in last week		X
Complementary food advice		X
Health communication	X	X
Advice and information	X	X
Promotions	X	X
Samples	X	X
Gifts	X	X

The questionnaires were designed in Microsoft Word and then entered in Formhub, an open-source online platform that allow data to be collected via phones or tablets, using the Android application ODK Collect (Formhub, 2013). The questionnaires were translated from English into French and Wolof, back translated into English to ensure accuracy, and uploaded into Formhub in French and Wolof. While French is the official language in Senegal, Wolof is widely used. Wolof translations were transcribed phonetically for both the questionnaire and mothers' responses. Interviews were conducted in French or Wolof, depending on the mothers' preferences. Data were collected using mobile devices - Samsung Galaxy tab 2.0 7 model tablet - in order to allow for immediate data entry, reduction in data errors, and prompt analyses. Data were submitted online directly to Formhub and submitted questionnaires were reviewed regularly to ensure data quality.

2.6 Statistical analyses

Data were cleaned and analyzed using SPSS version 22 (SPSS Inc.). Proportions and means \pm standard deviations (SD) were used to describe the results. Differences in associations were assessed through bivariate comparison, using 2-sided Fisher's exact chi-square test and Pearson's chi-square for proportions.

3 Results – Mothers interviewed at discharge after delivery

3.1 Demographics and socio-economic characteristics

Demographic and socio-economic characteristics of the 288 women included in subsequent analyses are shown in Table 3-1. Nearly all (93.4%) mothers were married at the time of interview, with a mean age of 28.1 years. Only 4.6% were less than 20 years of age. For nearly a third (27.9%), this was their first child and half (49.7%) of the newborns were girls.

One-fourth of mothers (25.7%) had no education and 21.9% had upper secondary or higher education. About one-fifth of mothers (21.5%) reported working outside the home and for pay.

Just over half (56.9%) of mothers reported that their household owned their dwelling, as compared to renting and all reported a safe source of drinking water with 71.9% having water piped into their homes. Television ownership was nearly universal (93.8%), two-thirds of mothers (62.2%) reported having a refrigerator in their home, and slightly over a fourth (27.8%) reported that their household owned a car.

Table 3.1 Demographic and socio-economic characteristics of mothers at discharge (n=288)

Characteristics	
<i>Age (years) (mean ± SD)</i>	28.1 ± 5.9
< 20 years (%)	4.6
<i>Parity (number of children ever born alive) (n=287) (%)</i>	
Primiparous	27.9
2-3	49.5
4+	22.6
<i>Marital status (%)</i>	
Married	93.4
Divorced,	1.0
Single	5.6
<i>Level of education (%)</i>	
None	25.7
Non-formal education	3.5
Primary	28.8
Secondary	20.1
Upper secondary	10.4
Higher	11.5
<i>Works for payment (%)</i>	22.9
<i>Works outside the home (%)</i>	22.9
<i>Housing (%)</i>	
Own	56.9
Rent	39.6
Lodging with friends/family or house watcher	3.4
<i>Water source (%)</i>	
Water piped inside home	71.9
Safe source of drinking water (%) (n=286)*	100
<i>Household Asset ownership (%)</i>	
Television	93.8
Refrigerator	62.2
Car/truck	27.8

* Safe source of drinking water: Main sources of drinking water reported by mothers were categorized into 'safe' and 'unsafe' sources. 'Safe' water included: piped water, a tube well, a borehole, a protected well, protected spring, or bottled water. 'Unsafe' water included: water from an unprotected well, unprotected spring, water from a tanker truck or small cart, rainwater, or surface water.

3.2 Antenatal care and delivery practices

All but one mother received antenatal care (ANC); 75.3% of mothers were cared for by a midwife and 21.5% by a physician (if seen by both, physician was recorded). ANC was received primarily at public clinics (81.8%) while 16.1% were seen at private facilities, and 2.1% were seen at a faith based or non-governmental organization (NGO) facility.

Most mothers (79.2%) were assisted at delivery by a midwife, and 15.6% were assisted by a physician. The rate of caesarian-section deliveries was low, at 13.5%. Most mothers (95.1%) with normal deliveries were discharged by the day after delivery: 34.1% were discharged within the first 24 hours after delivery and 61.0% were discharged when the baby was 24-47 hours old. Nearly all

(99.8%) of mothers with caesarian-section deliveries were discharged the second day postpartum (after 48 hours) or later (38.8% at 48-71 hours, 48.7% at 72-95 hours and 12.3% 96 hours or more postpartum) compared to only 4.8% of mothers with normal deliveries ($p=.000$).

3.3 Educational messages about infant and young child feeding (IYCF)

Information was gathered from respondents about the advice and counseling they received pertaining to IYCF within health facilities before and after delivery. Only 34 women (11.8%) reported receiving breastfeeding information during an ANC visit, with the most common message pertaining to exclusive breastfeeding (20 mothers, or 58.8% among those who received breastfeeding information).

In general, television was the most common source for receiving IYCF messages (4.9% or 14 of all women) and health facilities were the next most common (3.8% or 11 of all women). Other sources were mentioned by less than 3% of women.

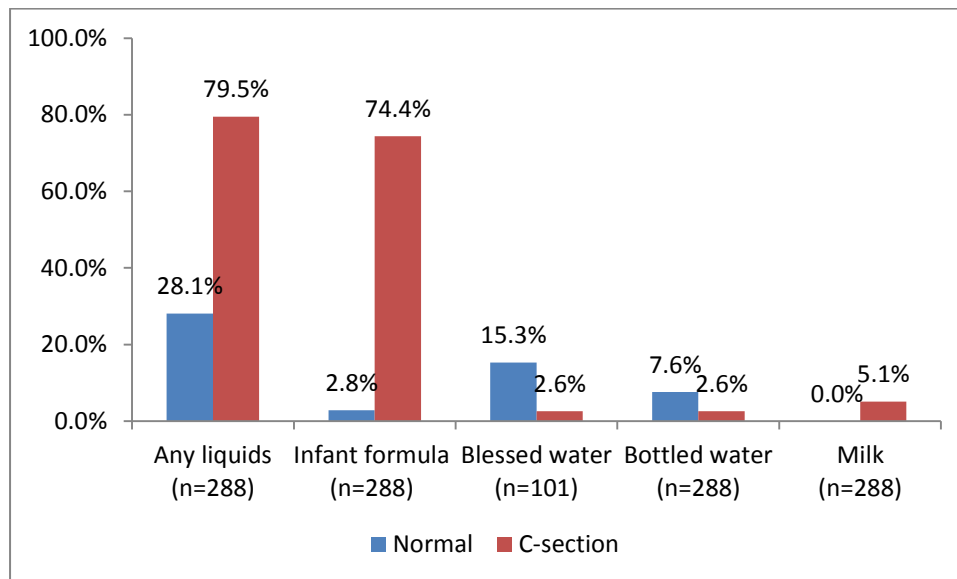
3.4 Infant feeding practices prior to discharge

One-fifth of mothers (22.2%, or 64 of all women) never put the baby to her breast while in the health facility. Of these mothers who did not put the baby to breast, 45.3% were discharged during the first 24 hours; while for those who put the baby to the breast in the health facility, 25% were discharged during the first 24 hours ($p=.003$).

While 118 (41.0%) mothers held their infant immediately after delivery and 15 (5.2%) within the first hour, only 2 (0.7%) mothers breastfed immediately and 12 (4.2%) initiated breastfeeding of their newborn within the first hour. Few mothers (39, or 13.5%) reported receiving assistance with positioning and / or attachment for breastfeeding from a health worker after delivery.

Pre-lacteal feeding in the first 3 days after delivery was relatively common, with 101 (35.1%) infants receiving such feeds. The most common pre-lacteal feeds were blessed water (by 39 or 13.5% mothers), infant formula (36 or 12.5% mothers), bottled water (by 20 or 6.9% mothers), sugar water (by 5 or 1.7% mothers), and milk (by 2 or 0.7% mothers). Women with caesarian-section deliveries were more likely to have given anything to drink ($p=.000$), including infant formula ($p=.000$), or milk ($p=.018$) than women who delivered normally (Figure 3.3) and less likely to have been given blessed water ($p=.000$). A high proportion (56.4%) of mothers with caesarian-section births ($n=39$) reported using infant formula because of pain from the surgery, while none of the mothers who delivered normally did so.

Figure 3.1 Percentage of infants who received pre-lacteal feeds by type of delivery (n=288)



Of the 36 mothers (12.5% of all women) whose infants were given infant formula prior to discharge, 58.3% (21 mothers) reported that it had been recommended by a health worker and half (18 mothers) reported they had not wanted the infant to receive infant formula. Health workers were ~~not~~ much more likely to recommend infant formula for caesarian-section births than for vaginal births ($p=0.000$). Only 1.2% of mothers of normal deliveries were recommended to use formula by health workers, compared to 46.2% of mothers with c-section births. .

3.5 Promotion of BMS and CPCF within health facilities

Recommendations for BMS use by health workers were reported by 23 (8.0%) mothers (Table 3.2). Only 3.1% of mothers reported observations of commercial advertisements for BMS in health facilities and 17.5% of mothers observed branding on health facility equipment/materials for infant and young child food or beverage brands; with nearly all (90.2%) having seen these on posters displayed in a health facility. No mothers reported receiving a sample of a BMS from a health facility.

Only 2.4% of mothers reported seeing a commercial promotion for CPCFs within the health facilities and no sample products were supplied. Only 11 mothers (3.8%) were given samples of vitamin or mineral supplements by a health worker (e.g. Plumpysup).

Table 3.2 Percentage of mothers exposed to promotions of BMS and CPCF within health facilities (n=288)

Type of promotion	Percentage of mothers (%)
Received recommendation to use infant formula from a health professional	8.0
Observed branding/logos on health facility equipment	17.5
Observed commercial advertisement of infant formula within health facility	3.1
Received infant formula sample from a health professional	0.0
Observed commercial advertisement of complementary foods within health facility	2.4
Received complementary food sample from a health professional	0.0
Received a gift from a health professional branded with infant formula	0.0

3.6 Promotion of BMS, CPCF and snack foods outside health facilities

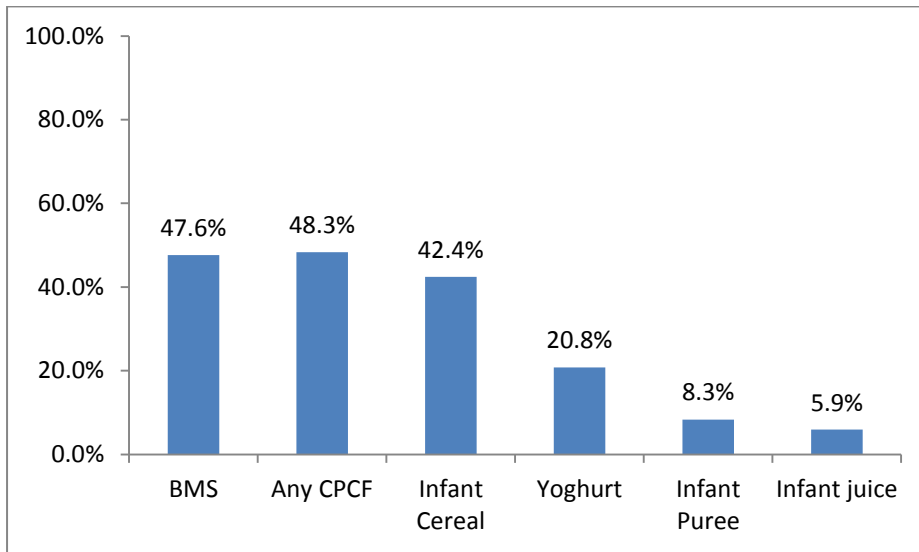
Nearly half (47.6%) of mothers reported having heard, seen or read commercial promotions for BMS - 37.8% saw them on television, 18.8% in a shop/pharmacy, and 6.6% on billboards. Other sources (internet, magazine/newspaper, radio, through the mail, or on a truck) were reported by less than 2% of mothers. Mothers could report more than one source of promotion.

Mothers could also report observed advertisements for more than one product and their open-ended responses included Bledina (12.5%) and Nursie (4.5%) (both made by Danone); Nan (6.8%), and Guigoz (3.8%) (both made by Nestle). Other products were reported by less than 1% of mothers.

Mothers were asked which age category of BMS the advertisement was for (they could report more than one type), 19.1%, 12.5%, 8.3% mentioned infant formula, follow-up formula and growing-up/toddler milks, respectively.

Mothers were also asked to report if they had heard, seen or read any promotion for a CPCF and 48.3% of mothers reported that they had. The most commonly cited CPCFs promoted were infant cereal, infant puree and infant juice (Figure 3.1). Some mothers (20.8%) also reported promotion of commercially produced yoghurt for general consumption as being a product for babies. Other commercially produced complementary food products were mentioned by less than 2% of mothers.

Figure 3.2 Percentage of mothers who reported having heard, seen or read a promotion for BMS and/or CPCF

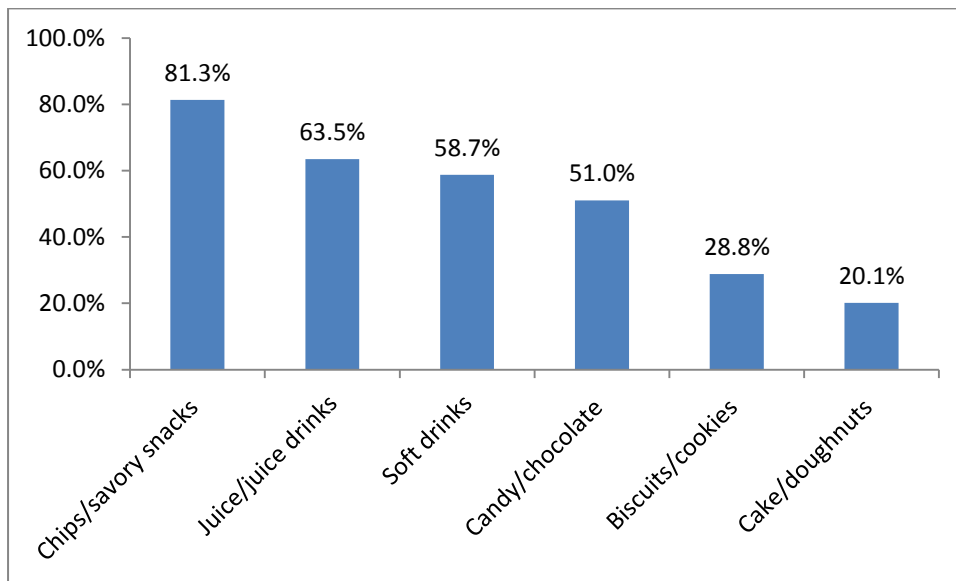


Television was the most frequently observed source for promotions of CPCFs reported by 34.4% of mothers while 17.7% reported a shop/pharmacy and 5.6% on billboards. Other sources (internet and radio) were reported by less than 1% of mothers.

Only five (1.7%) mothers reported receiving a discount or coupon for BMS and three mothers (1%) for CPCF either during pregnancy or since the delivery of their newborn. No mothers reported receiving a sample of a BMS or CPCF. Only three (1.0%) mothers received bottles/or teats, and only one was from a company representative and the other from family/friends.

Promotions for commercially produced snack food products or soft drinks for general consumption were reported by 83.0% of mothers. Commercial savory snacks were the most commonly reported product category with 81.3% of mothers having heard, seen or read such a promotion. Figure 3.2 shows the proportion of mothers reporting promotions for these products.

Figure 3.3 Percentage of mothers who reported having heard, seen or read a promotion for a commercially produced snack food product or soft drink for general consumption (n=288)



4 Results - Mothers of children <24 months of age

4.1 Demographics and socio-economic characteristics

Demographic and socio-economic characteristics for the 293 mothers of children <24 months of age included in this study who visited child health facilities are shown in Table 4.1. Nearly all (95.9%) mothers were married at the time of interview, with a mean age of 28.8 years. Only 2.7% were less than 20 years of age. For 36.9% of mothers, this was their first child.

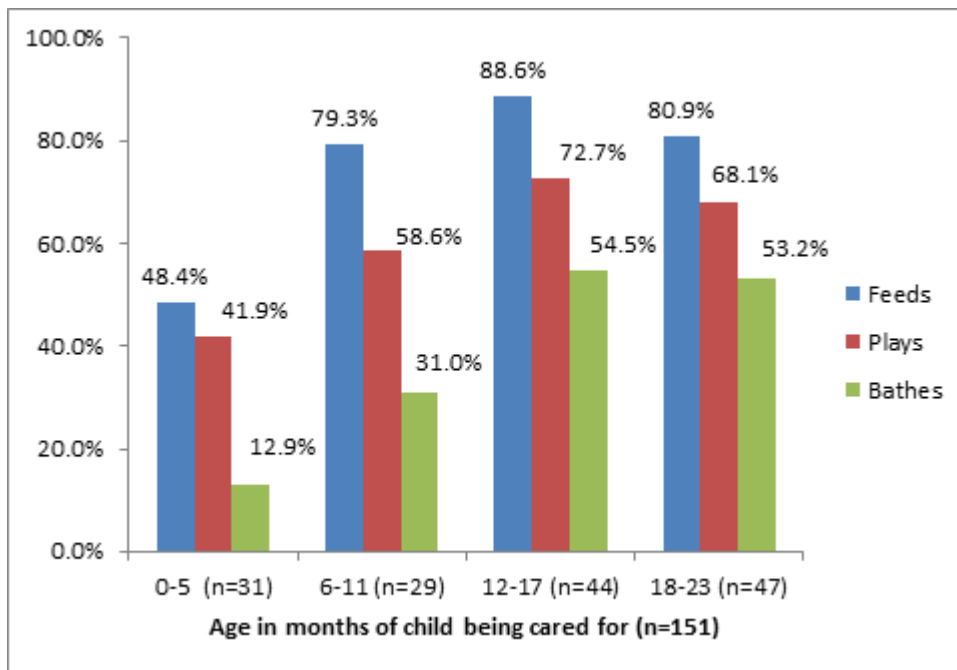
Nearly one fourth (23.5%) of mothers had no education and 22.9% had upper secondary or higher education. About one fourth (24.2%) of mothers reported working for payment. Just over half (55.0%) of mothers reported that their household owned their dwelling, as compared to 42.3% renting and almost all mothers reported a safe source of drinking water and 82.3% had water piped into their home. Television ownership was nearly universal (95.9%), two-thirds (68.9%) of mothers reported having a refrigerator in their home, and slightly over one fourth (29.3%) reported a car or truck in their household.

Nearly all (95.2%) of mothers were the main caregivers of their youngest child. Mothers were asked who took care of their youngest child when they left him/her and the proportion of mothers who never left their child was 48.1%, with mothers of younger children less likely to leave them than those with older children (57.3%, 59.7%, 40.5%, 35.7% for children 0-5 mo, 6-11 mo, 12-17 mo, and 18-23 mo respectively, $p=.011$). Only one mother reported leaving the child by themselves; one mother reported leaving her child with a caregiver aged 11 years or less; and 5.5% reported leaving them with an adolescent (12-17 years of age). Caregivers in the absence of the mother, were most likely to be relatives (80.8%). Of 151 mothers who left the child with someone else when they left the home, when asked to mention spontaneously what activities the caregivers undertook with the child, 76.2% mentioned feeding the child, 62.3% playing with the child, and 41.4% bathing the child. These rates were significantly different by age of the child as illustrated in Figure 4.1. ($p=.001$, $p=.039$, and $p=.001$ respectively).

Table 4.1 Demographic and socio-economic characteristics of mothers of children <24 months of age (n=293)

Characteristics	
<i>Age (years) (mean ± SD)</i>	28.8 ± 5.7
< 20 years	2.7
<i>Parity (number of children ever born alive)</i> (n=287)	
Primiparous	36.9
2-3	47.1
4+	16.0
<i>Marital status (%)</i>	
Married	95.9
Divorced,	0.7
Widowed	0.3
Single	3.1
<i>Level of education (%)</i>	
None	23.5
Non-formal education	4.1
Primary	33.1
Secondary	16.4
Upper secondary	10.6
Higher	12.3
Works for payment (%)	24.2
Works outside the home (%)	21.5
<i>Main caregiver of child (%)</i>	95.2
<i>Housing (%)</i>	
Own	55.0
Rent	42.3
Lodging with friends/family or house watcher	2.7
<i>Water source (%)</i>	
Water piped inside home (5)	82.3
Safe source of drinking water (%)	99.7
<i>Household Asset ownership (%)</i>	
Television	95.9
Refrigerator	68.9
Car/truck	28.3

Figure 4.1 Percent of children in non-mother care who were fed, played with or bathed by caregiver, by child age



4.2 Antenatal care (ANC) and delivery practices

Almost all (98.9%) mothers received antenatal care (ANC); 77.8% of mothers received care from a midwife and 20.8% from a physician (if seen by both, physician was recorded). Care was received primarily at public clinics (83.4%) while 16.2% of mothers were seen at private facilities. Most mothers (78.2%) were assisted at delivery by a midwife, and 19.5% were assisted by a physician. The rate of caesarian-section deliveries was low, at 13.7%. Nearly a fifth (18.4%) of mothers reported receiving breastfeeding information during an ANC visit, with the most common message being

related to exclusive breastfeeding (53.7% of those who reported receiving breastfeeding information). A similar percentage of women (16.7%) reported seeing, hearing or reading an educational message in a health facility about IYCF since their baby was born. Of the 49 mothers who reported hearing, seeing or reading an educational message at a health facility, 81.6% remembered the content, with the most common pertaining to exclusive breastfeeding (16 mothers, 32.6%) followed by advice with regards to complementary feeding (12 mothers, 24.5%). Over a third (38.9%) of women reported holding their infants within the first hour after delivery and 20.8% reported initiating breastfeeding within the first hour. Only 12.3% of women reported receiving assistance with positioning and/or attachment for breastfeeding from a health worker after delivery of their newborn.

4.3 Promotion of BMS and CPCF within health facilities

One-fifth (21.2%) of mothers reported that since the birth of their child health workers, had recommended that they use infant formula. Prevalence of these recommendations were similar across age groups, with 16.0% (n=12) of mothers of children 0-5 months, 19.4% (n=14) of mothers of children 6-11 months, 27.0% (n=20) of mothers of children 12-17 months, and 22.2% (n=16) of mothers of children 18-23 months having received such a recommendation from a health worker (p=0.407). Only 2.0% of mothers reported seeing a promotion for BMS within the health facility and 2.4% reported having received a sample or gift of infant formula or pacifiers from the health facility.

Less than 10 percent (6.8%) of mothers reported that health workers recommended CPCF, with the recommendation increasing with the age of the child, with 1.3% and 1.4% of those 0-5 months and 6-11 months compared to 8.1% and 16.7% of those with children 12-17 months and 18-23 months (p=.001). Only 2.0% of mothers reported seeing a promotion for infant and young child food or beverages (including BMS) within the health facility and only 2.7% of mothers were given samples of CPCF by a health worker. Only 5 mothers (1.7%) were given samples of vitamin or mineral supplements (e.g. Plumpysup) by a health worker.

One-fifth (19.8%) of mothers observed branding on health facility equipment/materials for infant young child food or beverage companies (including BMS and CPCF). Sixteen percent of mothers observed branding or logos on posters displayed in a health facility, 2.7% on pads of paper, 2.4% on decorations and 1% on blankets.

4.4 Promotion of BMS, CPCF and snack foods outside health facilities

Mothers were asked to recall promotions for BMS and CPCF outside health facilities. Two-fifths (41.0%) of mothers saw, heard or read a promotion for a breast milk substitute with mothers of older children more likely to have seen them than those with infants ($p=.001$) (Figure 4.2). Most saw advertisements on television (38.9%), 6.8% in shops or pharmacies, 4.4% on billboards, 1.4% on the internet, and 1.0% heard it on the radio.

Mothers could report advertisements for more than one product and their open-ended responses included Nido (15.7%) and Guigoz (2.0%) (both made by Nestle) while 7.8% reported Bledina and 3.1% reported Nursie (both made by Danone). Other products were reported by less than 1% of mothers.

Mothers were asked which age category of BMS the advertisement was for (they could report more than one type), with 16.7% and 17.1% mentioning infant formula and follow-up formula respectively (with no significant difference by age of the child, $p=.122$ and $.214$ respectively). Fourteen percent of mothers (14.3%) mentioned growing-up/toddler milks but this was mentioned significantly more among mothers of older children: 6.7% and 6.9% by those with 0-5 month and 6-11 month olds, but 23.0% and 20.8% by those with children 12-17 months and 18-23 month old respectively ($p=.003$).

About one-third (37.2%) of mothers reported seeing a promotion for CPCF outside of health facilities, with no differences noted by age of the child ($p=.369$). Most saw advertisements on television (34.1%), 5.5% in shops or pharmacies, 4.4% on billboards, 3.8% heard it on the radio, and 1.7% on the internet.

The most common product among the CPCF promotions was infant cereal (29.4%). Infant puree was mentioned by 1.9%. Yoghurt (4.9%), juice (5.5%) and sweet biscuits/cookies (3.1%) marketed for general consumption were all reported as being products promoted for infant and young children (Figure 4.3) Only two mothers had been given a discount or coupon for BMS and only one for CPCF.

Promotions for commercially produced snack food products and soft drinks for general consumption were reported by 93.5% of mothers. Commercially produced savory snacks were the most commonly reported product category with 92.8% of mothers having heard, seen or read a promotion (Figure 4.4).

Figure 4.2 Percentage of mothers who reported having heard, seen or read a promotion of BMS outside of health facilities by age of the child (n=293)

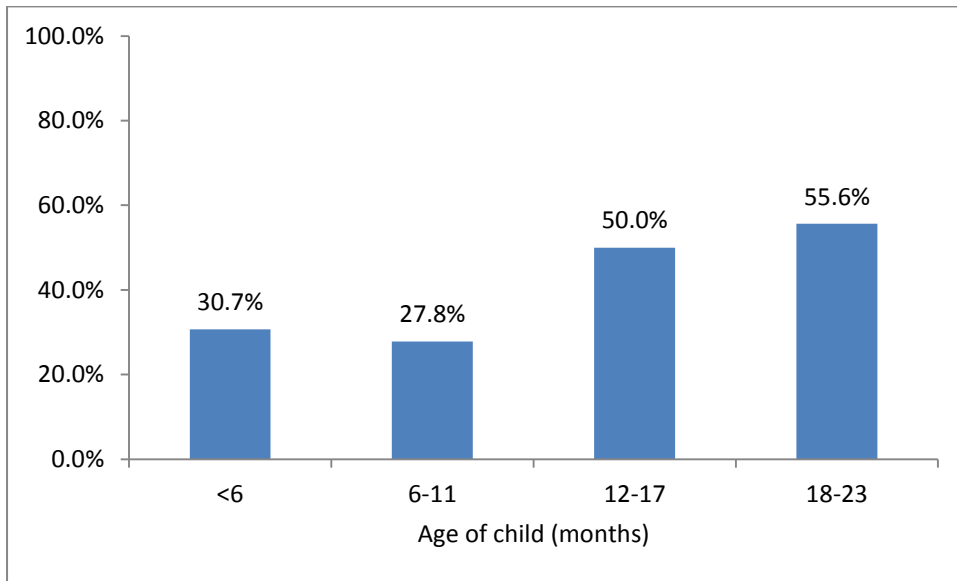


Figure 4.3 Percentage of mothers who reported having heard, seen or read a promotion of BMS or CPCF (n=293)

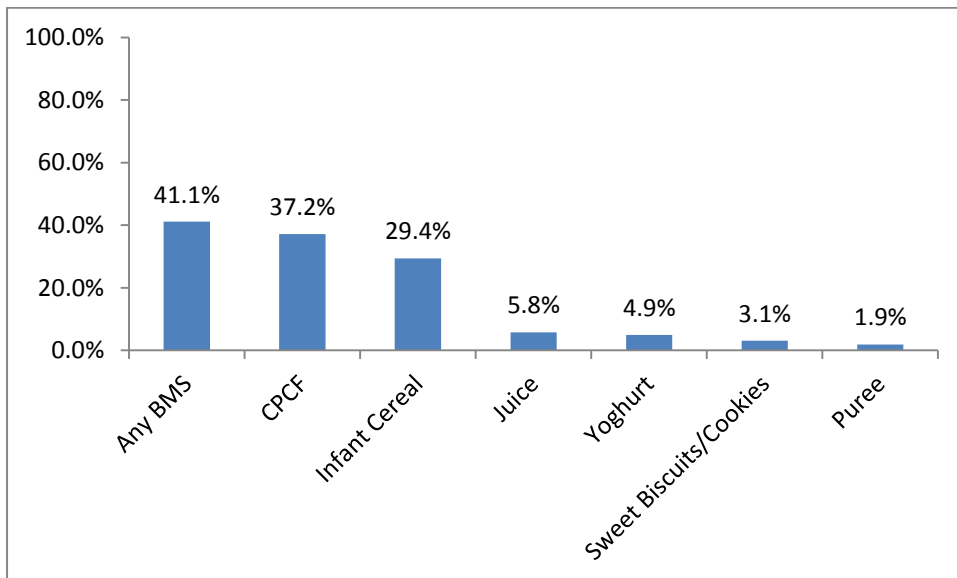
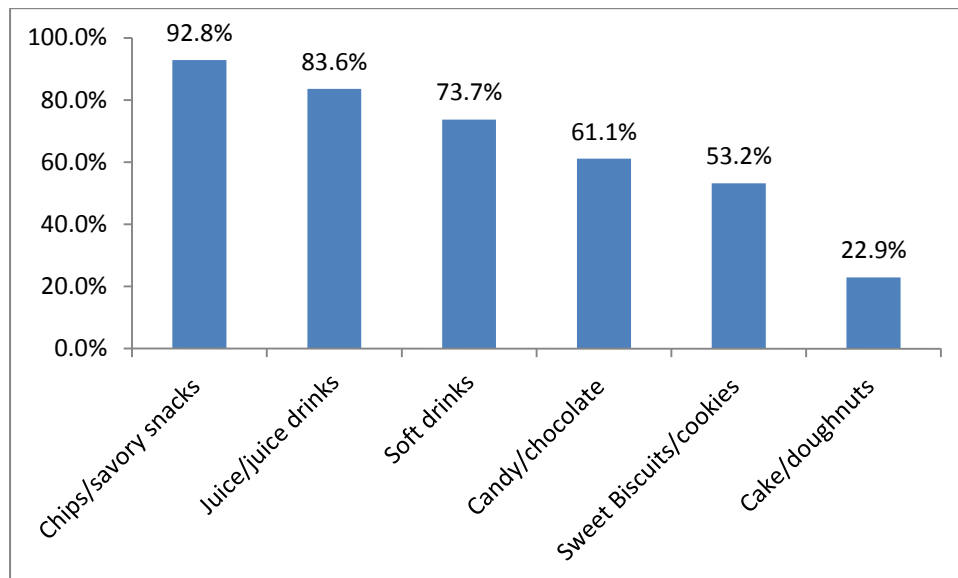


Figure 4.4 Percentage of mothers who reported having heard, seen or read a promotion of commercially produced foods for general consumption commonly fed to children less than two years (n=293)



4.5 Educational messages about infant and young child feeding (IYCF)

Information was gathered from respondents about advice and counseling they received within health facilities pertaining to IYCF. Only 4.8% reported receiving breastfeeding information during an ANC visit. However more women (16.7%) reported seeing, hearing or reading an educational message in a health facility about IYCF, with the majority recalling a message pertaining to exclusive breastfeeding (10 mothers, 3.4% of all women in the study), followed by a message regarding the need to start feeding the child with small amounts of foods (3 women, 1.0% of all women in the study).

In addition to IYCF messages received from health facilities, mothers were asked if they had heard, seen or read educational messages or information on IYCF, outside of health facilities. Of those that responded positively, television was the most common source (31.1% of all women), 11.9% from relatives, 8.2% from radio, 5.1% from friends, 3.8% from the internet, 2.0% from print media, and 1.4% from pharmacists. Other sources were mentioned by less than 1% of women.

Of the 91 mothers who had heard messages on television, 76.9% remembered the content, with the most common pertaining to exclusive breastfeeding (22 mothers heard messages about exclusive breastfeeding on television, or 7.5% of all women in the study). Other messages remembered from television advertisements were about feeding a variety of foods (21 women or 7.2% of all women in the study) and the introduction of complementary food at 6 months (20 women or 6.8% of all women in the study).

4.6 Current breastfeeding practices

All children <24 months of age had ever been breastfed and 100% of 0-5 month olds were still being breastfed, with 34.7% exclusively breastfed and 68.0% predominantly breastfed. Nearly all (91.9%) mothers were still breastfeeding at 12-17 months but this declined to 41.7 % for mothers of children 18-23 months of age (Table 4.2). Provision of liquids other than breast-milk in the first 3 days after delivery (pre-lacteal feeding) was relatively common, with 44.7% of infants receiving pre-lacteal feeds. The most common liquid given was blessed water (27.6% of all mothers) while 18.4% were given infant formula, and 8.2% were given honey.

Nineteen percent of mothers (n=28) with breastfed infants 0-11 months of age received a bottle on the preceding day, while only 7.5% of those 12-23 months of age had received a bottle the preceding day (p<.01). Among children 12-23 months of age, a greater proportion of bottle-feeding occurred among those who were not breastfed (25.0%) than among those who were breastfed (11.2%) (p=.031). There were too few **not** breastfed children to compare bottle use among younger children by breastfeeding status. In addition, there also were too few working women to assess the relationship of work with bottle feeding practices.

Table 4.2 Percentage of mothers breastfeeding and bottle-feeding (n=293)

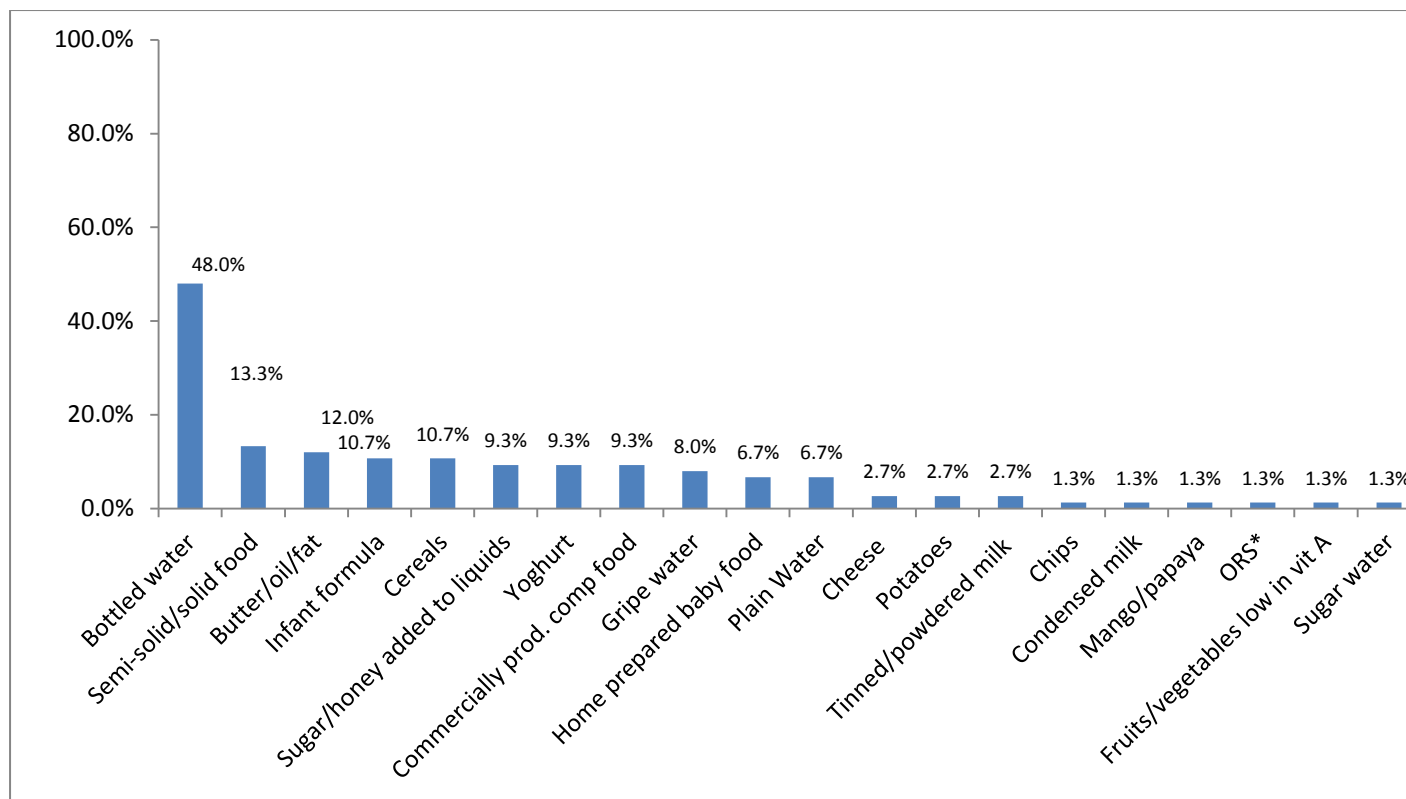
Feeding Practices	Percentage of mothers (%)
Ever breastfed	100
<i>Currently breastfeeding</i>	
0-5 months (n=75)	100
6-11 months (n=72)	95.8
12-17 months (n=74)	91.9
18-23 months (n=72)	41.7
Exclusively breastfed (among 0-5 mo old infants)	34.7
Predominantly breastfeeding (among 0-5 mo old infants)*	68.0
Continued breastfeeding at 1 year (12-15 months)	95.8
Continued breastfeeding at 2 years (20-23 months)	21.9
<i>Bottle feeding-among breastfed infants on preceding day</i>	
0-5 months	18.7
6-11 months	19.4
12-17 months	10.8
18-23 months	4.1
<i>Bottle feeding-among non-breastfed infants on preceding day</i>	
0-5 months	-
6-11 months	2.8
12-17 months	2.7
18-23 months	13.9

* 'Exclusive breastfeeding' is defined as no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for 6 months of life, but allows the infant to receive ORS, drops and syrups (vitamins, minerals and medicines). "Predominant breastfeeding" means that the infant's predominant source of nourishment has been breast milk (including milk expressed or from a wet nurse as the predominant source of nourishment). However, the infant may also have received liquids (water and water-based drinks, fruit juice) ritual fluids and ORS, drops or syrups (vitamins, minerals and medicines). (WHO, http://www.who.int/nutrition/topics/infantfeeding_recommendation/en/). We included water, sugar water, gripe water, tea/infusions/coffee, juice and juice drinks as part of predominant breastfed.

Figure 4.4 shows the foods and beverages, other than breast milk, consumed by children less than 6 months of age. Nearly half (48.0%) were fed bottled water, 13.3% were fed semi-solid or solid food and 10.3% were fed formula. Butter/oil/fat was added to semi-solid/solid foods (12.0%). Only 6.7% of infants were fed home prepared complementary foods and only 9.3% of infants were fed CPCFs (either infant cereal or puree) on the preceding day.

Only 1 child (out of 52 infants) aged 0-3.9 months consumed semi-solid or solid foods on the preceding day, while 39.1% of 23 infants 4.0-5.9 months of age received semi-solid or solid foods the preceding day (p=.000).

Figure 4.5 Percentage of infants <6 months of age who consumed liquids/foods other than breastmilk on the preceding day (n=75)



*Oral rehydration solution

4.7 Complementary feeding practices among children 6-23 months

Most children 6-23 months of age ate semi-solid or solid foods, with only 10.1% not having eaten any, which decreased from 16.7% for those 6-11 months compared to 8.1% and 4.2% of those 12-17 months and 18-23 months ($p=.070$). Minimum dietary diversity, defined as a child consuming at least 4 of 7 food categories in the previous day, was met by 47.2% of children 6-23 months of age (Table 4.3). Minimum meal frequency, defined as a child consuming food the minimum number of times or more in the previous day (with the minimum depending on their age and breastfeeding status), was met by 50.5% of children 6-23 months of age. A minimum acceptable diet, defined as the combination of these two indicators, was achieved by just nearly a third (31.7%) of children 6-23 months of age.

Table 4.3 Percentage of children 6-23 months of age meeting the minimal complementary feeding indicators (n=218)

Indicator	Percentage of children (%)
Minimum dietary diversity ¹	47.2
Minimum meal frequency ²	50.5
Minimum acceptable diet	31.7

¹ Calculated based on WHO IYCF indicators; minimum dietary diversity was defined as consumption of at least 4 out of 7 food categories (WHO 2008).

² Calculated based on WHO IYCF indicators; minimum meal frequency was defined as at least 2 times for breastfed children 6-8 months, at least 3 times for children 9-23 months, and at least 4 times for non-breastfed children 6-23 months (WHO 2008).

Beverages consumed by all children 6-23 months of age are shown in Table 4.4. Plain water was most commonly consumed (73.9%) the day prior to interview while over a third (35.3%) had consumed tinned/powdered milk. Juice/juice drink and bottled water was consumed by nearly a third of infants (30.7% and 30.3% respectively) and almost one-fourth (22.5%) had consumed tea/coffee followed by BMS (20.2%). The practice of adding a sweetener, such as sugar or honey, to liquids was not common with 13.3% of mothers of children 6-23 months having added them. Sweeteners were more commonly added to foods, with 60.1% of mother's having added sugar or honey to their child's food.

Table 4.4 Percentage of children 6-23 months of age consuming beverages on the preceding day (n=218)

Type of liquid	Percentage of children (%)
Plain water	73.9
Tinned/powdered milk	35.3
Juice/juice drink	30.7
Bottled water	30.3
Tea/coffee	22.5
Breast-milk substitute (BMS)	20.2
Soft drink/carbonated beverage	7.8
Broth (bouillon de soupe légère)	3.7
Sugar water	3.7
Rice/maize water	2.3
Gripe water	1.4
Condensed milk	1.4
Fresh animal milk	0.9
Oral rehydration solution (ORS)	0.5

The types of foods consumed by children 6-23 months of age in the day prior to interview are shown in Table 4.5. Cereal-based foods were consumed by almost all of these children (86.7%), yoghurts were consumed by 63.3% and butter, oil or fat added to food was consumed by 60.1%. Half (52.3%) of these children ate yellow/orange fleshed vegetables and one-third (36.7%) ate fish or seafood the day prior to the interview. Nearly half of the children aged 6-23 months had consumed savory (49.1%) and sugary (47.7%) snacks the previous day and almost two-thirds of mothers (62.8%) of these children reported adding sugar or honey to either a food or a beverage consumed by their child the previous day.

Table 4.5 Percentage of children 6-23 months of age consuming semi-solid foods on the preceding day (n=218)

Type of semi-solid/solid food	Percentage of children (%)
Cereal-based foods	86.7
Yogurt	63.3
Butter, oil or fat	60.1
Sugar or honey	60.1
Yellow/orange fleshed vegetables	52.3
Savory snacks	49.1
Sugary snacks	47.7
Potatoes	43.1
Fish or seafood	36.7
Other fruits and vegetables	27.5
Cheese	25.7
Eggs	20.6
Yellow/orange fleshed fruits	11.5
Dark green leafy vegetables	10.1
Beans or lentils	7.8
Peanut butter	8.7
Meat or poultry	7.8
Nuts	6.0
Organ meats	4.1
Dried fruits	0.5

4.8 Consumption of homemade complementary foods and family foods

Of children 6-23 months of age, 50.5% had consumed a homemade complementary food on the previous day and 77.1% in the previous week, with 42.7% having been fed a homemade complementary food every day in the past week.

Figure 4.5 shows that the proportion of children by age who had been fed a homemade complementary food or a CPCF. Older children were slightly less likely than younger children ($p=.133$) to have been fed a homemade complementary food. The most common home prepared complementary food offered was porridge, consumed by 32.6% of children, followed by mashed fruit or vegetables (8.3%), and stew or soup (1.8%) (data not shown).

Of 110 mothers who gave home prepared foods, 20.9% did so because the 'child likes it', 12.2% due to 'convenience', 10.7% because it was 'healthy', and 5.5% to 'vary the diet'. The rates of feeding homemade complementary foods were similar between working and non-working mothers (50.8% and 50.3%, respectively; $p=0.534$).

In addition to homemade complementary foods, mothers were asked about their feeding of homemade family foods, which referred to foods made at home for consumption by all members of the household, including adults and children. The only family food commonly consumed by children 6-23 months was *bouillie* - 'porridge of millet, peanut/palm oil, sugar sour cream', reported by 36.7% of mothers ($p=.128$).

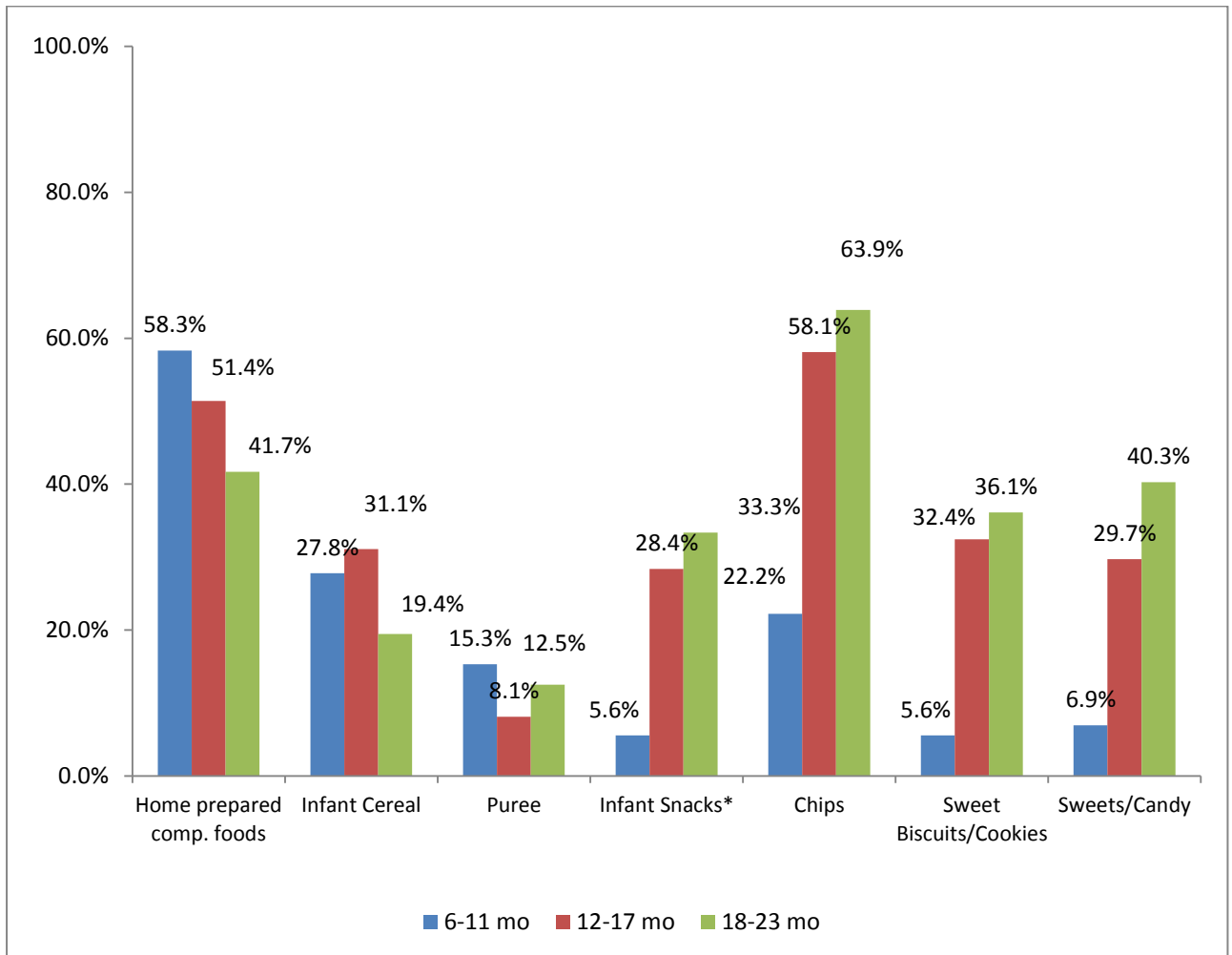
4.9 Consumption of CPCF

Half (49.1%) of children 6-23 months of age had consumed a CPCF the prior day, with 26.1% having consumed commercial infant cereal, 22.5% 'infant snacks' (rusks/finger foods), and 11.1% purees. When asked about brands of infant snacks, of the 45 mothers who reported infant snack consumption, none mentioned a brand sold by companies producing CPCF but instead mentioned brands of commercially produced snack foods products for general consumption. By contrast, all brands of infant cereals mentioned by mothers were manufactured by companies producing CPCF.

There was a slight difference in feeding CPCF when comparing working mothers (55.6%) and non-working mothers (46.5%, $p=0.142$). Of the 57 mothers who fed infant cereals on the preceding day, 45.6% said the reason was 'because the child likes it', 17.5% due to convenience, 12.3% because these foods are 'healthy' and 5.3% because adverts mentioned that they were 'good for the child'.

Figure 4.5 shows the percentage of children who consumed CPCFs by age. Older children were more likely to have eaten commercially produced infant snacks than younger ones ($p=.000$) but not commercial infant cereals ($p=.258$) or purees ($p=.403$).

Figure 4.6 Percentage of 6-23 months children who ate different types of CPCF on the preceding day (n=218)



*Includes snacks/finger foods (e.g. biscuits, rusks, puffed snacks, rice cakes).

4.10 Consumption of commercially produced foods for general consumption commonly fed to children less than 2 years of age

Mothers were asked to report on their youngest child's consumption of commercially produced snack food products and soft drinks for general consumption, on the preceding day and during the last week. Half or more of children 6-23 months ate chips (74.3%), sweet biscuits (55.5%), and sweets/candy (49.1%) in the last week, and over one-quarter (48.2%) ate chips or savory snacks on the preceding day, 24.8% sweet biscuits/cookies, and 25.7% candy, chocolate or sweets (Figure 4.6). A high proportion (81.2%) of children 6-23 months of age had consumed a commercially produced food for general consumption in the week prior to interview.

For chips, sweet biscuits/cookies and sweets/candy, consumption rates increased with age ($p=0.000$) both eaten on the preceding day (Figure 4.6), as well as eaten during the preceding week ($p=.000$). Mothers who had fed these products in the past week were asked to explain why they did so and high proportions of mothers reported that they gave these foods because the child liked them [chips (88.3%), sweet biscuits/cookies (80.2%), candy (86.0%), cakes (86.3%), and soft drinks (75.0%)].

The frequency of these items consumed in the last week is shown in Figure 4.7. Chips were commonly consumed daily (28.0%), and at least 4-6 days a week (21.1%) by children 6-23 months of age, while only 6% were fed sweet biscuits/cookies or sweets/candy daily and less than 2% were fed cake or soft drinks daily.

Figure 4.7 Percentage of children 6-23 months of age who consumed commercially produced snack food products or soft drinks for general consumption in the last week and previous day (n=218)

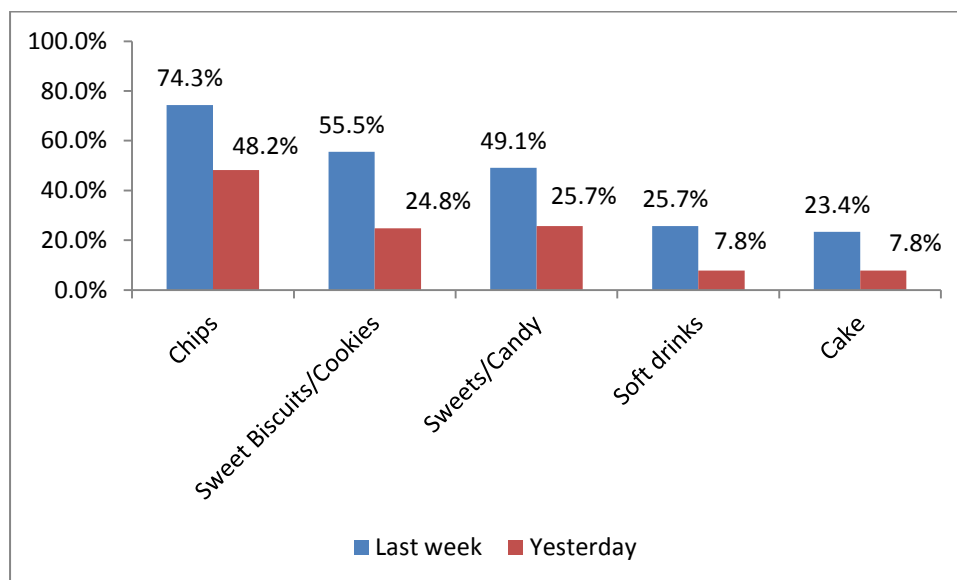
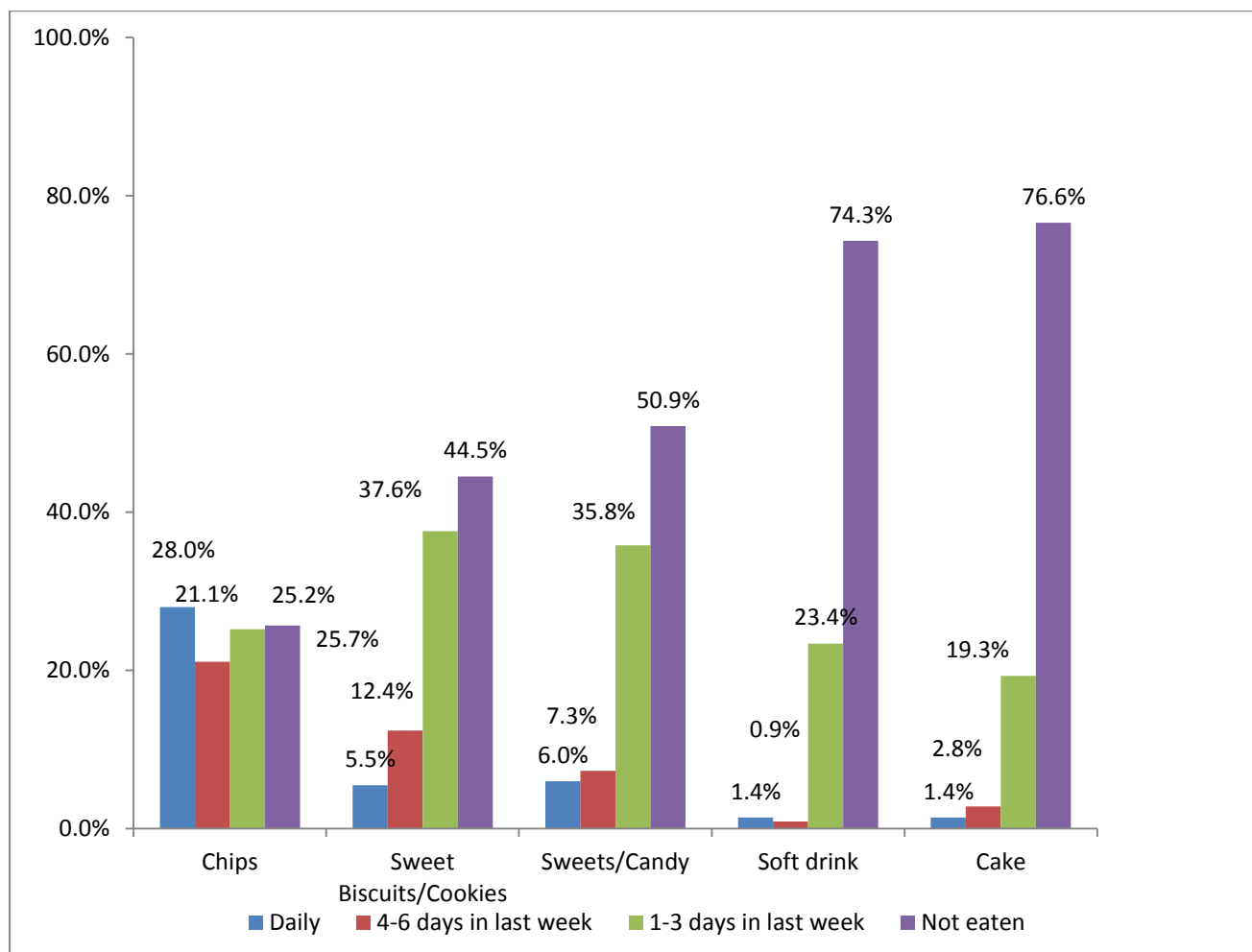


Figure 4.8 Percentage of children 6-23 months of age consuming commercially produced snack food products or soft drinks for general consumption in the last week by frequency of consumption (n=218)



Mothers who purchased commercially produced snack food products or soft drinks for general consumption in the last week reported spending on average per day 54.28 Francs CFA (\$.10 USD) on sweet biscuits/cookies, 17.14 Francs CFA (\$.003 USD) on sweets/candy/chocolate, 50.02 Francs CFA (\$.09 USD) on chips/savory snacks, 95.38 Francs CFA (\$.18 USD) on cakes/doughnuts, and 94.41 Francs CFA (\$.18 USD) on soft drinks.¹

4.11 Maternal aspirations for feeding additional foods

Mothers were asked if they would feed their child additional foods if they had more money and could afford them. Of those with children 6-23 months of age, 74.3% said they would, with specific foods mothers aspired to feed their children shown in Figure 4-8. Commercial infant cereal was the most commonly cited food, reported by 46.8%, of mothers, purees were reported by 22.5%, and infant formula was mentioned by 10.1%. Milk, fruit, and yoghurt were also mentioned by more than

¹ <http://www.xe.com/currency/xof-cfa-franc>, October 24 2014, 1 USD = 518.050 CFA Franc.

10% of mothers. The reasons for wanting to buy these foods are shown in Figure 4-9 noting that mothers' reasons for giving puree and yoghurt are not available.

Only mothers who mentioned wanting to give commercial infant cereal or infant formula if they could afford it, stated the reason as being "makes baby smart". Infant formula had the highest percentage of mothers who reported wanting to give a food if they had additional money because it was healthy (82.8%).

Figure 4.9 Percentage of mothers of children 6-23 mo of age who reported they would feed their children other foods if they had enough money (n=204)

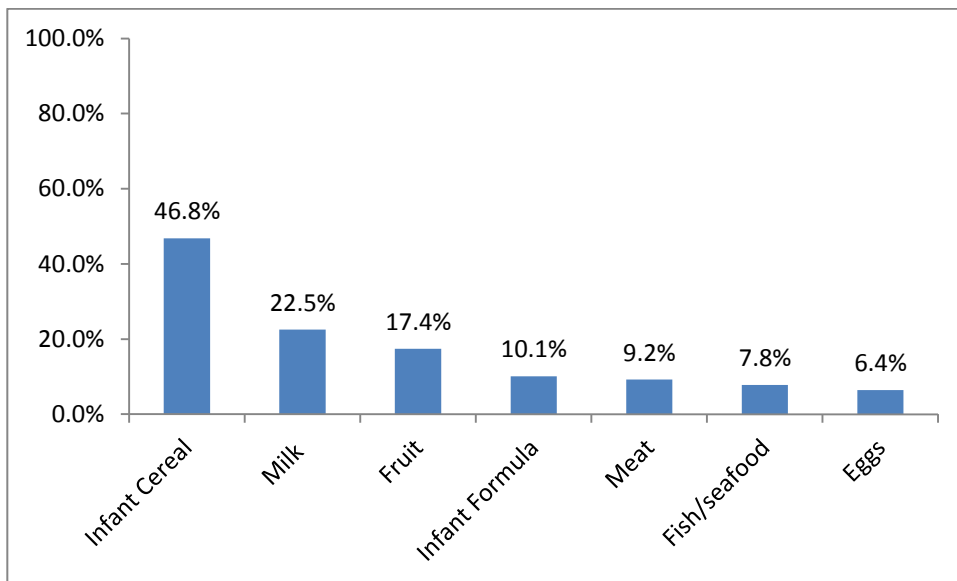
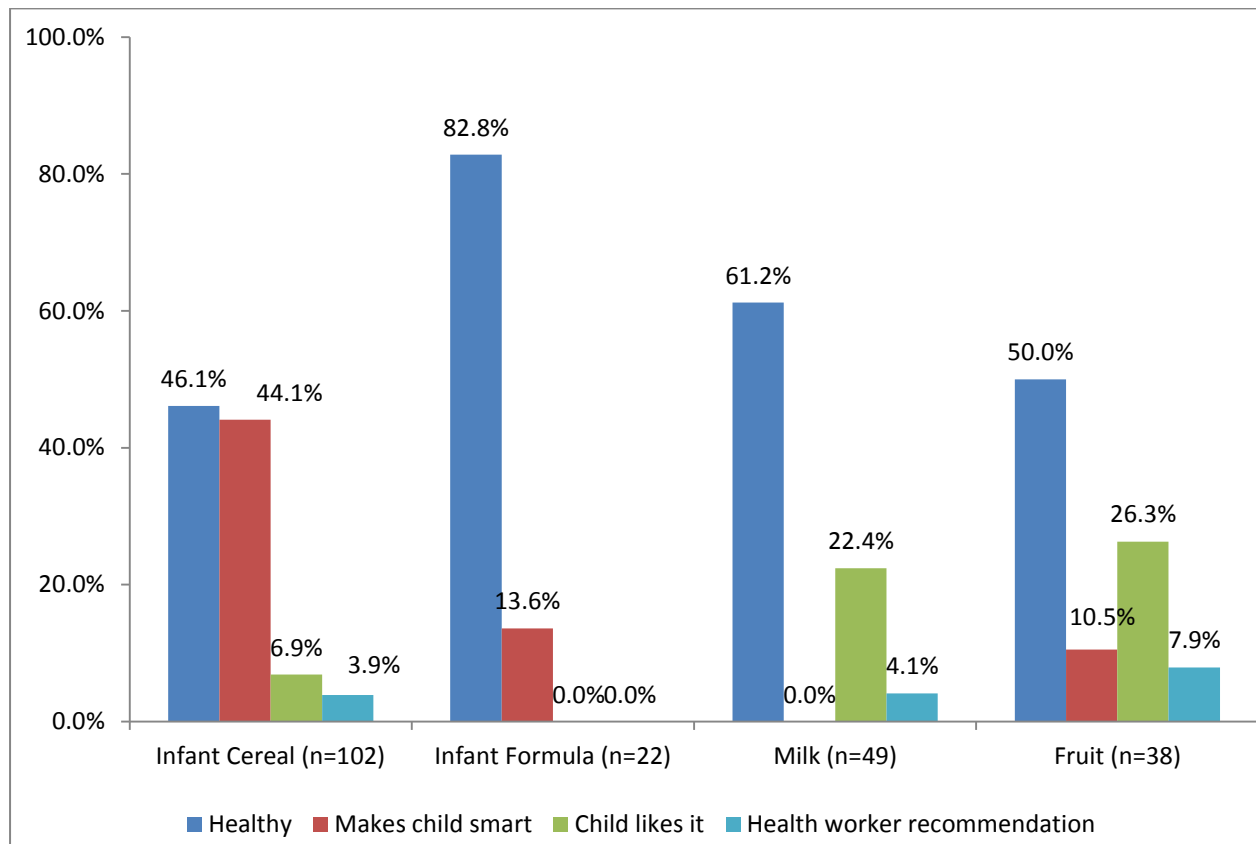


Figure 4.10 Percentage of mothers of children 6-23 months of age reporting reasons for wanting to buy and feed additional foods to their child.



5 Discussion

Senegal's *Inter-ministerial Decree Establishing the Conditions for Marketing Breast-milk Substitutes* includes explicit provisions prohibiting the distribution, promotional sale, advertising, or idealizing representations of breast-milk substitutes *within the health facilities associated with the Ministry of Health and Social Action (Article 3 of Arrêté 005969 of 25 July 1994)*. This does not apply to promotion outside of health facilities associated with the Ministry of Health and Social Action but infant formula and follow up formula can only be legally sold in pharmacies. Promotion of CPCFs or BMS for children over 12 months of age is not regulated by Senegalese legislation, nor is the marketing or promotion of other foods for general consumption that are commonly fed to children less than 2 years of age in Senegal.

This study sought to assess the levels of advice provided by health workers and the promotion of commercially produced infant and young child food products both inside and outside health facilities of Dakar Department, Senegal, and also to assess breastfeeding behaviors, the consumption of foods, including CPCF, commercially produced foods for general consumption, and home-made complementary foods. Interviews with mothers at discharge after delivery allowed for the assessment of exposure to promotion during pregnancy and delivery, while interviews with mothers of children <24 months attending child health clinics allowed for the determination of exposure to

promotion from the birth of the youngest child onwards, as well as the documenting of dietary information.

Eight percent of discharge mothers reported that health workers recommended that they use infant formula during their pregnancy or before discharge. One-fifth of mothers of children <24 months of age reported that health workers recommended that they use infant formula since the birth of their child. Less than 20% mothers in both study groups received breastfeeding information during antenatal care. Clearly there is a need for health workers to provide mothers with additional advice and support on breastfeeding during their contact with health facilities, particularly during antenatal care. In addition, further investigation into why health workers are recommending infant formula is necessary so as to identify ways to enable them to better promote and support breastfeeding.

Less than 10% of mothers of children <24 months of age reported that they received a recommendation from a health worker to use commercially produced infant cereal- or less than half the proportion who received a recommendation to use infant formula. This is noteworthy given that, in contrast to infant formula which is not considered necessary for optimal infant feeding, global guidance calls for use of appropriately formulated complementary foods as necessary in order to meet the recommended nutrient intakes of children aged 6-24 months (PAHO 2003).

Less than 5% of mothers in both study groups reported seeing a promotion for BMS within the health facility or having received a sample or gift of BMS or pacifiers from the health facility. However, although promotion of BMS within health facilities is counter to local legislation, nearly 20% of mothers in both groups observed BMS and/or CPCF branding on health facility equipment. Article 6.8 of the International Code of Marketing of Breastmilk Substitutes states that equipment and materials donated to a health care system may “bear a company’s name or logo, it should not refer to any proprietary product within the scope of the Code (e.g. name of an infant formula brand or complementary food brand). With one out of five mothers reporting items bearing BMS and/or CPCF branding, an inspection of facilities is warranted in order to determine the exact status and remove illegal promotional items.

Related data are available from a survey of point of sale promotions in health facilities in Dakar which gathered information from 23 different health facilities included in this study in either the discharge facilities or child clinics. Data were gathered from each health facility visited (and all pharmacies within the health facility) to assess whether there were sales of BMS, CPCF and commercially produced foods for general consumption. None of the pharmacies sold BMS, or commercially produced foods for general consumption nor had any promotions for these products. Two sold CPCF (locally produced) but no promotions in the pharmacies were found. However, CPCF promotions were observed in other sections of 15 (65.2%) hospitals (HKI unpublished data) and if these products are marketed as total or partial replacements for breastmilk they would be in contravention of Article 3 of the *Inter-ministerial Decree Establishing the Conditions for Marketing Breast-milk Substitutes*.

Commercial promotion for BMS outside health facilities was common with 37.8% of discharge mothers and 38.9% of mothers of children <24 months of age having seen advertisements on television. Similarly, 48.3% and 37.2%, respectively, saw advertisements for CPCFs on television. While not a violation of Senegalese law, the International Code of Marketing, which Senegal voted to adopt at the World Health Assembly, prohibits promotion of BMS directly to the public, and many

countries have enacted legislation prohibiting promotion of these products for children up to two years of age (UNICEF 2011). Promotions of commercially produced snack food products and soft drinks for general consumption were, not surprisingly, more prevalent than promotions for BMS or CPCF, with 83.0% and 93.5%, respectively having heard, seen or read a promotion.

In contrast to commercial promotions, few discharge women (4.9%) and mothers of children <24 months of age (31.1%) reported having seen educational messages or information on IYCF on television. Furthermore, even fewer claimed to see such messages in health facilities (3.8% and 16.7%, for discharge mothers and mothers of children <24 months respectively). Since almost twice as many mothers are receiving promotional messages from outside the facilities, they may significantly impact maternal knowledge, attitudes and practices regarding optimal IYCF practices.

Early initiation of breastfeeding was low, with 4.9% of discharge mothers and 20.8% of those with children <24 months of age breastfeeding their newborn within the first hour after delivery. While all women reported having breastfed their child <24 months of age, 22% of discharge mothers had not put the baby to breast by the time they were discharged. Since skin-to-skin contact between the newborn and their mother immediately post-delivery and early initiation (within 1 hour) of breastfeeding has been shown to be associated with increased duration of exclusive breastfeeding (Moore et al. 2012), this is of great concern. While the rate of caesarian-section deliveries was low, at 13.5% of mothers at discharge after delivery, those who delivered this way were much more likely (74.4%) to have given infant formula during their hospital stay compared to women who had natural deliveries (2.8%)($p=0.000$). Given that this is clearly a high risk group, targeted efforts are needed in order to provide health workers with the knowledge and skills required to better support these women to establish breastfeeding. A recent review of seven studies concluded that immediate or early skin-to-skin contact between mothers and newborns can improve breastfeeding outcomes, and increase maternal satisfaction after cesarean deliveries (Stevens et al. 2014).

Among mothers of children <6 months of age 33.3% were exclusively breastfeeding. Infant formula was given to 12.5% of discharge infants and 10.7% of infants <6 months of age. Nearly half (48.0%) of infants <6 months of age drank bottled water and 13.3% ate semi-solid foods on the preceding day.

Of children 6-23 months of age, 50.5% had consumed a homemade complementary food and 49.1% had consumed a CPCF on the previous day. However, nearly half (48.2%) of the children aged 6-23 months ate chips or savory snacks, 24.8% sweet biscuits or cookies and 25.7% candy, chocolate or sweets. Nearly two-thirds of mothers (62.8%) of children 6-23 months of age reported adding sugar or honey to either a food or beverage consumed by their child in the previous day. These figures are cause for concern given that consumption of energy-dense, nutrient-poor foods that are high in fat, sugar and salt can contribute to child overweight and obesity, and consumption of these foods is associated with elevated risks of non-communicable diseases (WHO 2003).

6 Recommendations

These findings point to changes that are needed to improve young child feeding practices in Senegal:

- 1) Health workers should include breastfeeding advice and support during antenatal care.

- 2) Support for mothers to breastfeed prior to leaving the hospital (mainly in the first hours after delivery) is needed so that all mothers can breastfeed immediately following delivery.
- 3) Special attention needs to be given to support breastfeeding and discourage infant formula use among mothers with caesarian-section deliveries.
- 4) Health workers should be discouraged from recommending infant formula to discharge patients and mothers of young children.
- 5) Commercial promotion of breast-milk substitutes outside health facilities is common and should be prohibited.
- 6) Many mothers confused advertisements for commercially produced food for general consumption commonly fed to children less than two years with commercially produced complementary foods, and the high levels of consumption of such foods, which are often snack foods, are a concern.

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