

# High prevalence of suboptimal child-feeding practices and child morbidity among families from low socio economic areas in Harare

Dexter T Chagwena

Department of Food Nutrition and Family Sciences, University of Zimbabwe

Prosper Chopera ([✉ pchopera@gmail.com](mailto:pchopera@gmail.com))

Department of Food Nutrition and Family Sciences, University of Zimbabwe <https://orcid.org/0000-0003-3824-2788>

Nyasha G Mushonga

Department of Food Nutrition and Family Sciences, University of Zimbabwe

Loveness K Nyanga

Department of Food Nutrition and Family Sciences, University of Zimbabwe

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## Research Article

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# Abstract

**Introduction:** Recommended child-feeding practices such as exclusive breastfeeding for six months, prolonged breastfeeding and adequate complementary feeding have been proven to reduce prevalence of malnutrition. Declining socioeconomic environment may be putting children from urban poor families at risk of malnutrition due to poor feeding practices and increased risk of morbidity.

**Objective:** The aim of this cross-sectional study was to assess child feeding practices and morbidity prevalence among Harare urban families living in low socioeconomic districts.

**Methods:** A health facility based cross sectional study was conducted in Harare in five clinics serving low socio economic communities from July to August 2012. A structured interviewer-administered questionnaire assessing WHO indicators for infant and young child feeding (IYCF) was used to interview primary caregivers on child-feeding practices. Secondary outcomes assessed was prevalence of diarrhea, influenza, malaria, measles, fever, and cough. Data were analysed using vSPSS-21 statistical software.

**Results:** A total of 218 infant and caregiver pairs attending growth monitoring at the clinics were enrolled in the study. Seventy-five percent of the children were below two years of age. There was a high prevalence of early introduction of complementary foods (81.4% before 6 months of age). About half (49.2%) of the infants had 4 or more meals per day. A significant proportion (74.4%) had been weaned onto family meals. Fifty-three (24%) of the children had been sick with diarrhea, 59% influenza , 1% malaria , 1% measles, 23% fever and 53% with a cough during the 1 month recall period.

**Conclusion:** There is a high prevalence of inadequate infant feeding practices and morbidity in low resource communities in Harare. There is need to design child-feeding interventions for the urban community targeting all family members involved in decision-making.

## Introduction

Promoting breastfeeding, dietary diversity and appropriate complementary child-feeding practices are the most cost-effective strategy to combat undernutrition, child morbidity and mortality in resource-constrained settings <sup>(1)</sup>. Child-feeding practices play an integral role in determining the nutritional status of a child <sup>(2,3)</sup>. Inadequate quantity and poor quality of food given to children, particularly under the age of five years result in growth faltering <sup>(4)</sup>. The WHO has published a set of recommendations to guide infant and young child feeding <sup>(5)</sup>. These recommendations include exclusive breastfeeding for the first six months of life, safe, nutritious and adequate complementary foods up to 2 years age and beyond with continued breastfeeding <sup>(5)</sup>. Furthermore infants and young children must be fed on a minimum acceptable diet (MAD) <sup>(6)</sup>. This consists of a diverse diet and adequate meal frequency. An infant's diet is said to be diverse if the child is fed on at least 4 food groups <sup>(6)</sup>. Frequency is defined according to age group as follows; an infant is said to have adequate meal frequency if they "receive solid, semi-solid, or soft foods at least twice a day for infants age 6–8 months and at least three times a day for children

aged 9–23 months. Nonbreastfed children age 6–23 months are considered to be fed with a minimum meal frequency if they receive solid, semi-solid, or soft foods at least four times a day”<sup>(6)</sup>.

Factors influencing child malnutrition are broad and include the wider social and economic environment <sup>(7)</sup>. Inadequate nutrition knowledge among caregivers, and meagre socio-economic and environmental conditions are key determinants of child malnutrition. Zimbabwe has experienced declining socio economic conditions with consequent rising unemployment levels. <sup>(8)</sup>. Whilst some sections of society have been able to cope through creative ways of generating income <sup>(9,10)</sup>, in general this decline has impacted negatively on the urban poor who rely on a steady source of income to meet their food security requirements. Such rapid changes make it difficult for families to properly provide for and feed their families <sup>(5)</sup>.

The last Zimbabwe Demographic Health Survey of 2015 reported high levels of stunting (23%) but low prevalence of wasting (1.0%) among under-fives in Harare <sup>(11)</sup>. A very high proportion 97.7% had ever been breastfed, with 52% being initiated within the first hour of birth. Only about a third (37%) had adequate minimum meal frequency. While the ZDHS is designed to yield nationally representative information it is important to zoom in on vulnerable sections of society to inform more targeted interventions. The objective of this study was therefore to investigate child feeding practices in areas of low socio economic status in Harare.

## Methodology

### Study design and setting

This was a cross-sectional retrospective study conducted in the city of Harare. Harare is the capital city of Zimbabwe with a total population of 2 123 132. The average household size is 4 and 74% of households are male headed. A third of the population (29%) are home owners whilst 48% are lodgers <sup>(12)</sup>. The city is divided into four districts (Eastern, Southern, Northern and Western districts). At the time the study was conducted the city was divided into 9 districts (northern, north eastern, eastern, south eastern, southern, south western, western, north west and central business district). The study was health facility based. Using growth monitoring attendance figures, primary care clinics with the largest attendance of individuals from low socio economic districts were purposively selected . These were Hatcliffe and Borrowdale Poly clinic from Nothern District, Mbare Poly Clinic from Southern District, Dzivarasekwa Poly clinic from North Western District and lastly Hatfield Poly clinic from South Eastern District. In total this gave 5 poly clinics from 4 Districts.

### Study participants

The following formula used to calculate sample size in cross sectional studies was used:

$$N = z^2 p (1-p)/e^2 \quad (13,14)$$

Where:

N = sample size

Z = confidence interval (which is at 95%, 1.96)

P = proportion of children aged 6-23 months living with their mothers who are fed according to the three IYCF feeding practices (breastfeeding status, number of food groups, meal frequency for Harare was 15.4%) .

e = error level of precision (which is 0, 05)

The calculated sample size was 196. To adjust for attrition, a non-response rate of 10% was factored in to give a final sample size of 216 (approximately 43.2 mother infant pairs per clinic) . Eligible participants were enrolled as they came to attend the monthly growth monitoring programme. Researchers continued to visit the clinic for interviews until the sample size specifically calculated for the health facility was reached. The inclusion criteria was any mother with a child under the age of five years with no underlying health problems. We excluded mothers or caregivers who were recent visitors to the area, non consenting and none parents to the infant. The study was conducted based on the ethical principles of respect, justice and confidentiality summarised in the 2013 Declaration of Helsinki <sup>(15)</sup>. The study was approved by the Harare City Health Services Department. Written informed consent was obtained from all participants prior to study procedures.

### **Data collection instruments**

A structured interviewer-administered questionnaire was used to interview caregivers on child-feeding practices from the time the child was born. The questionnaire was based on WHO IYCF indicators <sup>(6)</sup> and comprised questions on demographic characteristics of the caregiver, previous and current child-feeding practices as well as social, economic and cultural factors that influenced the child-feeding practices. The questionnaire was pretested for ambiguity, validity and reliability at a clinic that was not participating in the study and revised accordingly. To assess for morbidity the caregiver was asked to recall if the child had been ill first in the 1 month preceding the interview. This was confirmed using clinic card where possible. Height of the caregiver were measured to the last completed 1mm using a stadiometer and weight to the nearest 0.1kg using a Tanita scale (Tanita, IL USA). Body mass index (BMI) of the caregiver was determined by dividing the caregiver's weight in Kg with the square of the height measurement in metres <sup>(16)</sup>. Data was entered into Microsoft Excel 2010 and analyzed using SPSS software package version 21 (Chicago, Illinois USA). Frequencies and percentages were used to evaluate the feeding practices. Chi-square analysis was employed to test for association between categorical variables. Statistical significance was set at p<0.05.

## **Results**

## **Baseline characteristics of the children and their caregivers**

A total of 218 infant and caregiver pairs were enrolled in the study between July and August 2012 after the primary caregiver had given consent to participate .The questionnaire response rate was 96.8%. Most of the children in this study (75%) were below 24 months of age (Table 1). Approximately 85% (n=189) of the care givers had a secondary or higher level of education. Most of the caregivers (75%) were unemployed. Most respondents (82%) reported to receive household monthly income of less than USD\$500. Of the total births 6% were home deliveries, whilst most (93%) were deliveries at a health facility. Slightly more than half of the respondents (53%) interviewed were from high-density areas. A significant proportion of the mothers (32%) were overweight. The range of the number of children in a family was between one and ten and most families (86.7%) comprised of three or fewer children.

Table 1 - General characteristics of participants and household, Harare

<b>Characteristic</b>	<b>No</b>	<b>%</b>
<b>Children's age status (N=218)</b>		
<12 months	102	47.4
12-24 months	62	28.8
24-48 months	38	17.7
48-59 months	5	2.3
60+ months	8	3.7
<b>Place of birth (N=218)</b>		
Home	14	6.4
Clinic	116	53.2
Hospital	86	39.4
Other	2	1
<b>Residential status (N=218)</b>		
Low density	98	45.0
High density	116	53.2
Other	4	1.8
<b>Employment status of caregiver (N=188)</b>		
Unemployed	141	75.0
Self-employed	34	18.1
Private company	12	6.4
Government employee	1	0.5
<b>Maternal education (N= 218)</b>		
No education	3	1.4
Primary	26	11.9
Secondary	180	82.6
Post-secondary	7	3.2
College or university	2	0.9
<b>Income status (N=210)</b>		
<US200	89	42.4
US201-500	91	43.3
US501-1000	23	11.0
>US1000	7	3.3
<b>Mother's marital status (N=218)</b>		
Single	9	4.1
Married	198	90.8
Divorced	2	0.9
Widowed	4	1.8
Co-habiting	5	2.3
<b>Mother's BMI status (N=210)</b>		
<18.5	8	3.8
18.5-25	135	64.3
>25	67	31.9

## **Infant and young child-feeding practices**

Breastfeeding was almost universal with 96.3% of the children reported to have been breastfed. Of those who were not breastfeeding, this was attributed to the care givers' HIV status (0.5%), the use of formula milk (0.5%) and weaning (0.5%). A large proportion (61.5%) of children were initiated on breastmilk within the first hour after birth, 26.6% started breastfeeding a few hours after birth and the remaining 8.7% did so a few days after birth. A mere 11.5% of the children were fed on milk formula as a breastmilk substitute. The dominating breastmilk substitutes were Nan (56%) and cow's milk (28%). At the time of our study, 32% of the women interviewed had ceased breastfeeding. Most children (81.4%) had been introduced to complementary foods before they reached six months and almost a third (30.2%) had been introduced within the first three months. Of the mothers who had ceased breastfeeding by the time the study was conducted, a large number (90.1%) had done so before the child reached two years of age. Most of the children (74.4%) were weaned onto available family foods. The second most common weaning food was porridge (23.3%).

Table 2 – Child-feeding practices for infants and young children among Harare urban families

<b>Characteristics</b>	<b>No</b>	<b>%</b>
<b>Age of child at cessation of breastfeeding (N=70)</b>		
<3 months	2	2.9
3-6 months	2	2.9
6-12 months	9	12.9
12-24 months	50	71.4
24+ months	7	10
<b>Was the child ever breastfed</b>		
Yes	210	96.3
No	4	1.8
<b>Reasons for not breastfeeding from participants not breastfeeding</b>		
HIV positive	1	0.5
Child weaned	1	0.5
Preferred formula	2	0.9
<b>Age of child at initiation of complementary feeding (N=162)</b>		
< 3 months	49	30.2
3-6 months	83	51.2
6-9 months	29	17.9
>9 months	1	0.6
<b>Type of foods given to children (N=150)</b>		
porridge	35	23.3
sadza (thick porridge)	1	0.7
mashed foods	1	0.7
Soups	1	0.7
family meals	112	74.7
<b>Number of meals given to the child per day (N=183)</b>		
One	10	5.5
Two	24	13.1
three	59	32.2
four	34	18.6
five	2	1.1
on demand	54	29.5

## Morbidity among children

Morbidity was rife in this sample population as almost half (45%) of the respondents reported that their child had been ill at least once during the month before this study was conducted. Fifty-three (24%) of the children had been sick with diarrhoea. Other common diseases were influenza (59%), malaria (1%), measles (1%), fever (23%) and cough (53%). Most children (53.7%) had been sick with more than one illness and a few (2%) children had been sick with all five illnesses during the recall period.

## Child care practices

In 90.4% of the responses, the mother was the primary caregiver of the child at home. Other dominating child-minders during the day were househelps (2%) and relatives (6%). Less than 1% of the children were

being cared for by their fathers during the day. More than half (55%) of the mothers were influenced by a health care worker to breastfeed their child (Figure 1). Thirty-three mothers (15.1%) reported to have been influenced to breastfeed by more than one person.

A large proportion of the caregivers (70.2%) reported that they had never attended any child-feeding awareness campaign. Ninety-five per cent of the caregivers had valid growth monitoring cards for their children and 81.5% of these were recorded up-to-date. Most of the children (82%) did not attend preschool for various reasons. Major reasons were, 49.5% were too young and not of preschool going age, whilst 17.9% the parents could not afford the fees.

### **Determinants of child-feeding practices**

The chi-square test of association revealed significant associations between marital status ( $p=0.000$ ), the mother's level of education ( $p<0.000$ ) and whether the mother breast fed her child or not. Divorced mothers and those with secondary education were more likely not to have breastfed. The time of breastfeeding initiation was significantly associated with marital status of the respondents ( $p=0.007$ ) and the child's birth place ( $p<0.000$ ). Married women and those who delivered in a health facility were highly likely to initiate breastfeeding within the first hour of birth. The types of foods given to children at the time of the study were significantly associated with the marital status ( $p=0.008$ ) of the mother. There was no significant association between child meal frequency and monthly income ( $p=0.305$ ) mother's educational status ( $p=0.692$ ) and mother's BMI ( $p=0.712$ ).

## **Discussion**

We set out to investigate child feeding practices and morbidity prevalence in families from low socio economic districts in Harare. We found high prevalence of inadequate infant feeding practices as 81.4% had been introduced to complementary foods before 6 months and half had less than the recommended meal frequency of 4 per day). We used time at introduction of complementary foods as a proxy for exclusive breastfeeding. Less than 20% of caregivers interviewed can be said to have practiced exclusive breastfeeding. This points to low EBF rates. Despite various breastfeeding campaigns, exclusive breastfeeding is still not commonly practiced in many low socio economic countries<sup>(17)</sup>. In 2016 Zimbabwe national statistics gave a EBF prevalence of 40% in Zimbabwe. In a recent study in Southern Zimbabwe EBF rate was low at 34%<sup>(18)</sup>. In the latter study older mothers, and those more economically independent, and with more than 2 children were more likely to practice EBF, whilst mothers living in small houses (less than 2 rooms) and younger mothers were less likely to practice EBF. Context specific determinants of EBF for these districts of Harare must be investigated in order to come up with relevant interventions.

By no surprise morbidity was also highly prevalent in these communities. Low rates of EBF has detrimental effects on the nutritional and health status of children<sup>(19,20)</sup>. This could have contributed to the increased morbidity among children in this sample population, as almost half of the children had

been ill within the month prior to this study. In the absence of exclusive breastfeeding, most caregivers turn to mixed feeding, which has been seen to increase the risk of illness<sup>(21)</sup>.

We noted that there were no specific complementary foods given to the children. Most children were weaned straight onto the family diet, eating the same foods as adults except for porridge, which was almost universal among respondents. Also more than half had an inadequate meal frequency (less than 4 meals per day). This shows that these urban families did not have infant-specific foods that are can cater for the needs of infants. These should be nutrient dense and soft enough for children to be able to ingest and digest efficiently<sup>(5)</sup>. The reason for absence of child-specific foods could be a lack of knowledge among caregivers or the family's inability to afford child-specific foods however this remains to be proven. Various studies in low socio economic areas have also found less than optimum infant feeding practices<sup>(22–24)</sup>. However with appropriate interventions such as positive deviance this narrative can be changed<sup>(25)</sup>.

While there was no association between meal frequency and various socio economic indicators and mothers nutritional status, child-feeding practices can be influenced by multiple variables including social, economic, biological, cultural and political conditions<sup>(26)</sup>. Caregivers' knowledge on feeding of infants and young children is a crucial internal factor that has a great impact on feeding practices among households. Further studies must assess knowledge levels, attitude and perceptions as these are strong drivers of child nutrition status<sup>(27)</sup>.

The limitation of this study was that it was health facility based. This may have left out mothers who do not visit health facilities for growth monitoring. The results may therefore not be generalizable to the whole of Harare. Furthermore we deliberately selected districts of low socio economic status therefore results should be interpreted with caution. A community based study is recommended to capture all families in a more representative manner. As this was a health facility based study, it is by no surprise that compliance to growth monitoring programme was high as shown by the high number of up-to-date child health card records. Using a cross sectional study design means that we cannot establish causality however as this is the first study to zoom in on child feeding practices in Harare districts the results are important to inform future studies.

As the results showed that a lot of family members participated in child feeding decisions, there is need to design child-feeding interventions for infants and young children that target all family members who participate in decisions concerning child feeding. The health facility and health worker still play a very important role as shown by the fact that most mothers received education on IYCF from health care workers. Their role must be supported and strengthened.

## **Declarations**

### **ACKNOWLEDGEMENTS**

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## CONFLICT OF INTEREST

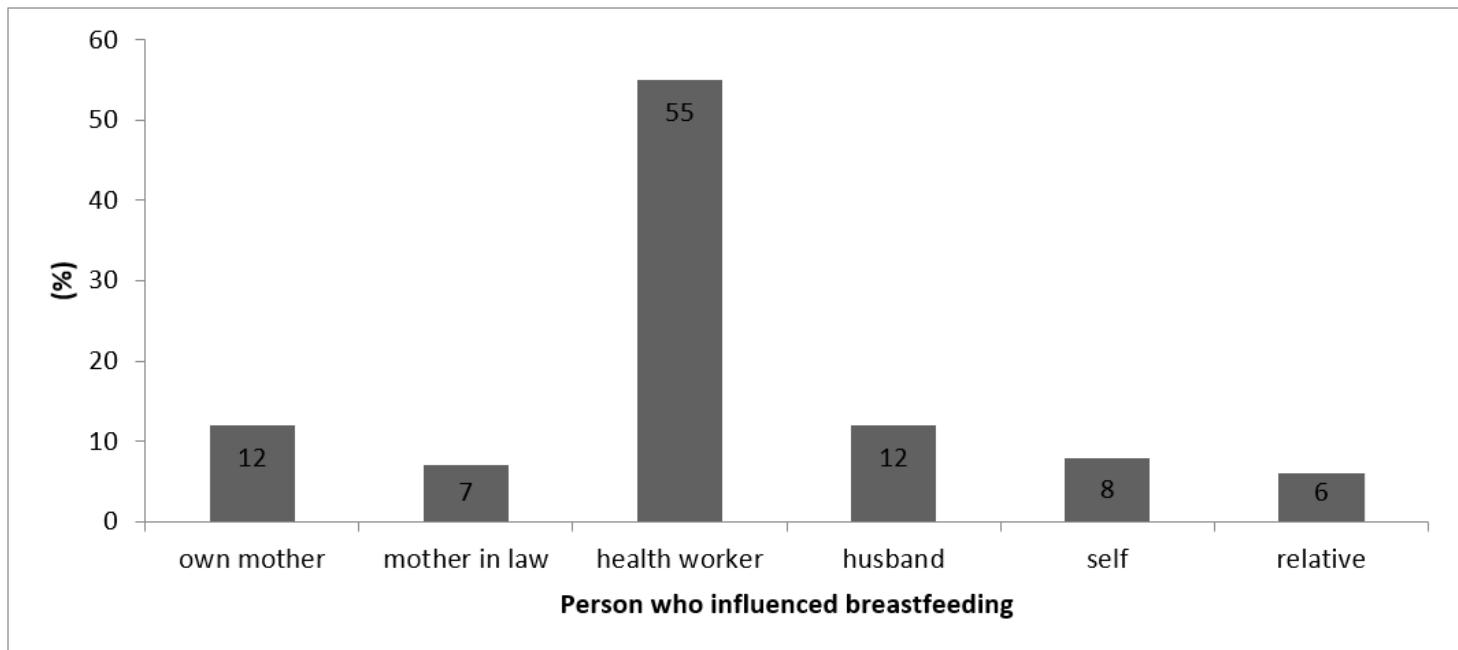
We declare no competing interests

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## Figures



**Figure 1**

Most likely individual to Influence caregivers to breastfeed. \*Responses were not mutually exclusive