



Assessing Restrictive Factors to the Optimal Infant and Young Child feeding Practice: A case study of Mothers of Children from zero to 23 months admitted to the Therapeutic Nutrition Unit of the University Teaching Hospital for Mother and child, N'Djamena, Chad

Makhlouf Himeda^{1*}, Barka Abakoura², Mahamat Bechir³, Ali Haroun Hissein³, Mahamat Garba Issa¹, Abdelsalam Tidjani³

¹*Direction for Nutrition and Food Technology, P.O. Box 440 N'Djamena, Chad*

²*Polytechnic University of Mongo, P.O. Box 4377 Mongo, Chad*

³*Department of Public Health, Faculty of Human Health Sciences, University of N'Djamena, P.O. Box 1117, N'Djamena, Chad*

Key words: Infant, Restrictive Factors, Food, Child, Mother.

<http://dx.doi.org/10.12692/ijb/21.1.148-159>

Article published on July 28, 2022

Abstract

This study was conducted to evaluate the restrictive factors for the optimal infant and young children feeding practice among mothers of children from zero to 23 months. A sample of 80 mothers or caregivers of children admitted to UTHMC answered a physical questionnaire by interview. The results showed that the use of health services by these mothers was significant with up to 87.5% of the mothers who had been to a prenatal consultation and 70% had given birth in a health center. These mothers' IYCF practices were appreciable with 53.75% of them who had initially started breastfeeding, 88.75% had given colostrum to their children, and 63.65% had introduced feeding with food other than milk at the right time. Despite these appreciable results, some factors such as home childbirth (30%), illiteracy (42.5%) and unemployment (82.5%) limit optimal child feeding practices.

* **Corresponding Author:** Makhlouf Himeda ✉ himedamakhlouf@yahoo.fr

Introduction

Malnutrition results from an unbalanced food intake that is unable to cover the nutrients needed by the body. When these needs are not satisfied, the body becomes weak (UNICEF, 2011). Globally, 55 million (10%) of children under 5 years are emaciated. The size of the child, emaciation and the delayed intra-uterine growth induce 2.2 million deaths per year and account for 21% of the total of all death caused by children under 5 years (The Lancet, 2008). It is in sub-Saharan Africa and Southeast Asia that the situation was the most severely degraded (FAO *et al.*, 2017); they represent three-quarters of the children suffering from growth delay. In sub-Saharan Africa 40%, and in South Asia 39% of children under 5 years are suffering from this growth delay (UNICEF, 2013). In Chad, a sub-Saharan African country, completely landlocked and mostly desert of 1,284,000 million km², malnutrition remains a real public health problem. With a population estimated at 15.8 million, of which 50.6% are women, Chad is one of the poorest countries in the world characterized by an endemic poverty ranking 187th according to the Human Development Index (UNDP, 2019). The country also suffers from unfavorable climatic conditions to which precarious socio-economic factors are added.

This induces, among other things, the persistence of all forms of food insecurity and malnutrition among the majority of the Chadian population in all the provinces of the country. Indeed, the annual cost associated with this scourge is estimated at 575 billion CFA, or 9.5% of GDP (COHA, 2016). However, despite the various interventions implemented to improve food and nutrition security, the nutritional status remains alarming. Because according to the results of the national nutrition survey, the national prevalence of global acute malnutrition was 12.9%, including 2.9% of the severe form (SAM), thus placing the country in an alarming nutritional situation according to 2006 WHO classification (DNITA, 2019). According to the Global Nutrition Report (2018), malnutrition has many causes acting at different levels. Access to water, sanitation and hygiene, income, education and basic social services are all

important. However, a common cause of all forms of malnutrition is improper diet (including inadequate breastfeeding for babies). Non-optimal breastfeeding, i.e., breastfeeding that does not comply with WHO recommendations (exclusive breastfeeding for the first 6 months, then breastfeeding in addition to food until the age of 2 childhood) leads to an increased risk of mortality during the first two years of life and is the cause of 800,000 deaths per year (The Lancet, 2013). Globally, 60% of the 10.9 million annual deaths among children under five are due to malnutrition, and more than two-thirds of these deaths, which are often associated with inappropriate feeding practices, occur in the first year of life (WHO, 2003)^a. Because after birth, a number of practices can directly disrupt growth; unsuitable breastfeeding practices such as non-exclusive breastfeeding, unsuitable and inappropriate complementary feeding according to the child's age, difficulties in access or use of various types of food and insufficient intake of micronutrients (UNICEF, 2013). Promotion of breastfeeding, appropriate complementary feeding, vitamin A and zinc intake and appropriate management of severe acute malnutrition (SAM) are the most promising actions in terms of reducing mortality and the future burden of disease from malnutrition (The Lancet, 2008).

Indeed, exclusive breastfeeding during the first six months, adequate complementary foods and adapted feeding practices until the age of two years are essential to ensure normal growth and development of the child during this crucial period (FAO *et al.*, 2018). Accordingly, the best feeding practices for infants and young children as described by UNICEF (2013) which includes the initiation of breastfeeding within one hour after birth, exclusive breastfeeding during the first six months and the continued breastfeeding for at least two years in conjunction with safe and age-appropriate feeding of solid, semi-solid and soft foods from the age of 6 months is paramount. Hence, the interest of this study, whose general objective is to evaluate the factors restricting the optimal practice of infant and young child feeding among mothers of children from zero to 23 months.

Material and methods

This is a cross-sectional study with a descriptive aim, which took place from August 24 to September 23, 2018, within the Therapeutic Nutrition Unit (UNT) of the University Teaching Hospital Center for Mother and Child (UTH-MC) of N'Djamena in Chad.

Population

The target population of this study is made up of mothers or caregivers of children aged zero to 23 months admitted to the TNU of UTH-MC.

Included subjects were mothers and/or caregivers of children who agreed to answer the questionnaires. The exclusion concerned those who refused to participate in the survey. The variables collected for this purpose are age (using a birth certificate or in months), sex, weight on admission (on the UNT register), edema (register), Brachial Perimeter (register) and other child and mother composite variables.

Sampling

The sample studied was only those mothers or caregivers who agreed to participate in the study. The sample size was calculated using the Lorentz formula below:

$$N = \frac{Z\alpha^2 p (1-p)}{d^2}$$

N = Minimum sample required;

Z α = 95% confidence interval, i.e. 1.96;

d=5% margin of error (standard value 0.05);

P=SAM prevalence (upper limit of SAM prevalence from the 2019 SMART survey)

q = 1 - p

$$N = \frac{1,96^2 \times 0,11 \times (1-0,11)}{0,05^2} = 68$$

By applying this formula, the sample size N= 68 malnourished children was included in the study.

Data collection

The data was collected using a questionnaire with

four sections, namely:

Identification of the child and his mother or companion;

The anthropometric parameters;

Infant and young child feeding practices;

Care practices.

Data analysis

The data collected using a previously established questionnaire was processed using Epi info, SPSS version 20.0.0 and R version 3.2.5 software. The analysis of variance (ANOVA) was carried out for the studied parameters means comparison, and the Chi 2 test for the proportions' comparison.

Results and discussion

A total of 80 mothers of children whose socio-economic characteristics are presented in Table 1 are investigated.

Socio-economic characteristics of children-mothers

Age and matrimonial regime

The results obtained during this study show that the average age of mothers is 25 years and that 87.5% of respondents are married, against 7.5% of divorcees, 3.75% of widows and only 1.25% of single. Also, among those who are married, 62.85% lived in a monogamous regime, and 37.15% in a polygamous regime. A higher number of married mothers was observed in the study by Loukoula *et al.* (2020), in which 94.6% of mothers were married and 78.9% lived in a monogamous marriage.

Education level, socio-professional activities and number of dependent children

The education level of the investigated mothers shows 42.5% illiterate, 27.5% have reached the secondary level, 20% the primary level and 10.0% the university level. In addition, 81.48% of mothers had more than two dependent children. Concerning the main activity carried out by the mothers or caregivers surveyed, it appears that 66 of them or 82.5% do not carry out any income-generating activity against 9 or 11.25% traders and 5 or 6.25% doing other activities. Illiterate mothers represent more than half (51.10%)

of the tested population in the study reported by Traoré *et al.* (2018) and these women were housewives in 64.20% cases. In addition, Onah *et al.* (2014), pointed out that most of the mothers interviewed in their study belonged to the lower socio-economic class and their highest level of

education was secondary school. On the other hand, Loukoula *et al.* (2020) found that 71.5% of women were educated in some countries. They found during the same study that 69.6% of mothers had more than two dependent children; therefore, a lower score than that was determined in this study.

Table 1. Socio-economic characteristics of children mothers.

Variables	Number	%
Marital status		
Married	70	87.5
Divorced	6	7.5
widow	3	3.75
Single	1	1.25
Matrimonial regime		
Monogamist	44	62.85
Polygamist	26	37.15
Educational level		
Illiterate	34	42.5
Secondary	22	27.5
Primary	16	20.0
University	8	10.0
Main activity		
No activity	66	82.5
Commerce	9	11.25
other activities	5	6.25
Agriculture	00	00
Animal breeding	00	00

Nutrition of pregnant women and use of health services

Prenatal consultation during the last pregnancy

For the prenatal consultation (PC) during the last pregnancy, the results show that 87.5% of the mothers surveyed did so with an average of 5 visits made against 12.5% who did not make any prenatal consultation (Table 2). This result is better than that reported by Traoré *et al.* (2014), similar to that of Al Ghwass and Ahmed (2011), according to which mothers have made four or more prenatal consultations represented 68.63% of respondents. The most pointed reason for those who have not done any prenatal consultation is the lack of financial means. Thus, concerning the absence of PC, Traoré *et al.* (2018) indicated that this could be explained by the lack of knowledge of the importance of PC, and by socio-economic conditions, showing in their study that educated women (61.60%) attended PC services better than illiterate women (43.30%). In addition,

housewives (61.90%) followed the PC better than those exercising a professional activity (34.90%). Chiabi *et al.* (2019), meanwhile, pointed out in their analysis that their study region (Northern Cameroon region) had the highest percentage after the Far North region (Cameroon) of women who did not do any prenatal consultation (PC) and gave birth without any medical personnel assistance. This would contribute to the reduction in the promotion of exclusive breastfeeding. The personal decision to stop breastfeeding in 45% of the mothers in their study was done for no particular reason.

Pregnant mother's meal frequency

The results show that 60% of mothers or caregivers ate only 1 to 3 times a day compared to 40% who ate more than 3 times. The reasons given by those who only ate between 1 and 3 times a day is either they had no appetite (73%), or they are sick (21%) or other (6%). Ravaoarisoa *et al.* (2018) found in their study

that pregnant women eat the meal three times a day, and that according to some pregnant women, certain foods are forbidden to them during pregnancy. This is the case of peanuts, a food rich in fat, which is reported as favoring the delivery of a big baby. This could be explained by the fact that pregnancy is a period of change and the nutritional needs increase with it (Hubin-Gayte and Squires, 2012). Also, for the principles of healthy, varied and balanced nutrition recommended during pregnancy and which also apply

throughout the duration of breastfeeding, no specific dietary rule is justified or prohibited, including for the quantity of water drunk daily, with the exception of caffeine and alcohol (ANAES, 2002). Even after childbirth, a mother's nutritional status continues to influence that of her child through breastfeeding (UNICEF, 2019). It is, therefore, essential to emphasize the crucial 1000-day period from pregnancy to the second birthday of the child (WHO, 2017).

Table 2. Characteristics of the pregnant woman nutrition and use of variable health services.

Variables	Number	%
Prenatal consultation during the last pregnancy		
Yes	70	87.5
No	10	12.5
Food intake frequency during pregnancy		
between 1 to 3 times	48	60.0
more than 3 times	32	40.0
Place of childbirth		
Health center or Hospital	56	70.0
Home assisted by trained midwife	3	3.75
Home without assistance by trained midwife	21	26.25

The place of birth

In relation to the place of delivery, it appears that 70% of mothers had given birth in a health facility compared to 30% who gave birth at home, the majority of them without the presence of a qualified midwife. The reasons given by women who gave birth at home are, among others: the cause of sudden delivery (11.25%), the distance from the health center (3.75%), the lack of financial means (3.75%), the habit of giving birth at home (2.5%) and the lack of a health center (2.5%). Most of the literature on this subject has focused on the mode of delivery, which is of paramount importance, and they have demonstrated the influence that the latter could have on the practice of breastfeeding. This is why Onah *et al.* (2014) pointed out that the mode of delivery also had a strong influence on the practice of exclusive breastfeeding.

In particular cesarean delivery which was associated with less practice of EBF (exclusive breastfeeding).

Infant and young child feeding practices

The practice of early initiation to breastfeeding

Regarding the early initiation of breastfeeding, the results show that 53.75% of mothers had initiated breastfeeding early against 46.25% who initiated it lately (over an hour). The reasons put forward for late breastfeeding by mothers are the absence of milk at delivery, postnatal pain, the child's refusal to suckle (Table 3). This result is clearly superior to that obtained by Sinhababu *et al.* (2010) who reported that although breastfeeding is universal, only 13.6% of children in their study were subjected to the breast within one hour of birth. And that about 5% of newborns (n=647) had to wait at least 24 hours before receiving their first sip of breast milk. Like of Mukuku *et al.* (2017) who pointed out that early initiation to breastfeeding is practiced in 37% of cases and in 60% of cases, children were put to the breast between the 1st and 24th hour after birth. The proportion of mothers who breastfed their children within one hour after birth was 48.3% in urban areas

in the study by Lubala (2016). Ake-Tano *et al.* (2014), on the other hand, indicated that regarding breastfeeding at birth, only 3.6% of the children in their study had started breastfeeding within one hour of their birth. These low rates could be explained by the fact that according to a WHO study (2019), in one-third of countries, less than 50% of newborns are breastfed within one hour of birth. The rate is below 33% in most African countries in Chad, Congo, Côte d'Ivoire, Gabon, Guinea, Nigeria and Senegal. These countries also have low rates of exclusive

breastfeeding ranging from 0.3% to 33%. Globally, babies who start breastfeeding within an hour after birth are much more likely to survive, even compared to babies who start breastfeeding later in their first day of life (UNICEF, 2019). Early initiation of breastfeeding in newborns is associated with a reduced risk of mortality during the neonatal period (Mullany *et al.*, 2008). A study by Edmond *et al.* (2006) reported that 16% of neonatal deaths could be avoided if all infants were breastfed from day 1 and 22%, if breastfeeding started within the first hour.

Table 3. Feeding infants and young children.

Variables	Number	%
Practice of early initiation to breastfeeding		
Immediately (less than an hour)	43	53.75
Between one and 24 hours	16	20.0
More than 24 hours	21	26.25
Colostrum		
Yes	71	88.75
No	9	11.25
Frequency of breastfeeding		
1 to 7 times	7	8.75
8 to 12 times	14	17.5
More than 12 times	59	73.75
Practice of exclusive breastfeeding		
Yes (introduction of other foods after 6 months)	51	63.65
No (introduction of other foods before 6 months)	29	36.25
Breastfeeding and weaning (months)		
Weaning before 6 months	14	17.5
6 to 12 months	12	15.0
12 to 18 months	16	20.0
18 to 23 months	12	15.0
More than 23 months	26	32.5

Colostrum

The results indicate that 88.75% of newborns benefited from colostrum against only 11.25%. This result is similar to that reported by Samega-Janneh *et al.*, 2001 who pointed out that in Gambia 88.6% of 324 mothers surveyed gave colostrum to their babies and only 11.4% did not. Indeed, colostrum is rich milk produced by the mother during the first days after childbirth. The most cited reason prohibiting its use is that colostrum is bad milk, regardless of the fact that it provides essential nutrients as well as antibodies to boost the baby's immune system, thereby reducing the risk of death during this period (UNICEF, 2013).

However, many consider colostrum to be "dirty" (UNICEF, 2019), although failure to breastfeed the child from birth can have a detrimental effect on his health. Because it is during the first breastfeeds, within the twenty- four hours after birth, that the child benefits from colostrum which contains the mother's antibodies essential to prevent many diseases (Ake-Tano *et al.*, 2014).

Breastfeeding frequency

Mothers who breastfeed more than 12 times a day represent 73.75%, and 17.5% of them breastfeed their children between 8 and 12 times. The remaining

8.75% breastfeed less than 8 times a day. Infant feeding depending on the child's breast demand is reported by 54.43% of mothers, 22.78% of mother's breastfeed when the child cries and 21.52% breastfeed when they want to do so. Sinhababu *et al.* (2010) observed that 93.6% of all infants in their study under the age of six months were breastfed 8 or more times in the 24 hours preceding the survey, the average number of feedings being 12.3 (+2.3). Wholistically, most breastfed infants need to breastfeed frequently, including at night (often more than the 6 to 7 feedings usually recommended), especially since breastfeeding has functions other than nutritional (comfort, pleasure, tenderness) (ANAES, 2002). There is no demonstrated advantage in reducing the number and duration of feedings nor in setting a minimum interval between 2 feedings (ANAES, 2002).

The practice of exclusive breastfeeding (EBF) and the introduction of other food before 6 months

Results on the practice of exclusive breastfeeding show that 63.65% of mothers practiced EBF by having started to introduce a food other than breast milk at the appropriate time (after 6 months) against 36.25% who introduced it early (before 6 months). The reasons given for not practicing exclusive breastfeeding are the lack of milk and the child's refusal to breastfeed. Although according to current WHO recommendations, infants should receive exclusive breastfeeding for the first 6 months of life, and then receive complementary foods after 6 months while continuing breastfeeding for the first two years or more (WHO, 2006). Several studies have shown an early introduction of foods other than breast milk by mothers in sub-Saharan Africa. Indeed, Diagana and Kane (2016) showed in their study that 28.1% of children under six months received breastmilk substitutes in addition to breastfeeding. Chiabi *et al.* (2019) reported in their study that the introduction of solid foods was early, and that a total of 115 infants (38.3%) received solid foods before 6 months. Traore *et al.* (2014) mentioned 30.66% the proportion of mothers who practiced EBF up to 6 months. In the studies by Onah *et al.* (2014) and Ake-Tano *et al.*

(2014), exclusive breastfeeding was practiced respectively by 134 (33.5%) and 39.6% of the mothers surveyed. Al Ghwass & Ahmed, 2011 found a low rate of mothers who continued to exclusively breastfeed for 6 months (9.7%), although the breastfeeding rate was 95.8%. The low rate of exclusive breastfeeding in West Africa was also noted by WHO (2019), it was indicated that only about a third of the countries in the region have already reached the 50% threshold of exclusive breastfeeding and that the median exclusive breastfeeding rate for the region is 41.9% (data from 2002 to 2015). The range is wide: from 0.3% in Chad to 87.3% in Rwanda. Exclusive breastfeeding is a cornerstone of child survival and health because it provides essential and irreplaceable nutrition for child growth and development (WHO and UNICEF, 2017). This low rate indicates an early introduction of complementary foods with a lower nutritional value than breast milk. This could adversely affect the nutritional status of children, leading to malnutrition. (Mavuta *et al.*, 2018). Indeed, Al Ghwass & Ahmed (2011) showed the relationship between exclusive breastfeeding and the nutritional status of infants during the first six months of life. They reported that infants who were not exclusively breastfed were nearly four times more likely to be underweight than exclusively breastfed infants. Also, giving young children early complementary foods exposes them more to pathogens and therefore increases their risk of contracting diarrheal diseases (Aké-Tano *et al.*, 2014). Turck *et al.* (2013) pointed out that infectious morbidity and mortality are indeed much lower in breastfed infants (WHO, 2003; UNICEF, 2011). It is also noted that the fact of giving the infant only breast milk with the exception of any other liquid, solid or even water, the use of drugs, vitamins and trace elements do not change the exclusive breastfeeding status (ANAES, 2002).

Factors influencing the practice of exclusive breastfeeding

For the influence of socio-demographic factors on exclusive breastfeeding, Chiabi *et al.* (2019) cited that the 2011 DHS in Cameroon found that the mother's

level of education significantly influenced breastfeeding practices. This agrees with the analysis of Onah *et al.* (2014) who showed that mothers with a higher level of education are more likely to understand and be better informed about the benefits of EBF, and delayed the introduction of other types of feeding compared to mothers with a lower level of education. There is also the socio-professional activity of mothers that has an impact on children feeding. In 2015 a study involving 11,025 participants from 19 countries, cited by UNICEF (2019), mothers employment was the most frequently cited barrier to exclusive breastfeeding. On the other hand, Mukuku *et al.* (2017) cited in their study that Noirhomme-Renard and Noirhomme (2009), in a literature review, underlined that socioeconomically more advantaged women breastfeed more and longer than those who have a low socio-economic status.

For the influence of other factors, a study by Diagana and Kane (2016) showed that the age of 35 years and over and the birth of at least three children were significantly associated with continued exclusive breastfeeding. They put forward the hypothesis that the experience of multiparous mothers allowed them to take more autonomy with regard to the advice of those around them and in particular of grandmothers. They also found that having received prenatal counseling was significantly associated with the continuation of EBF. Also, Al Ghwass & Ahmed (2011) described a highly significant association between exclusive breastfeeding and antenatal care, with mothers who made four or more antenatal care visits being 1.9 times more likely to exclusively breastfeed their children than other mothers. Also, a relationship between early initiation and exclusive breastfeeding has been noted in several studies where a highly significant association between exclusive breastfeeding and early initiation to breastfeeding after childbirth, the absence of breastfeeding difficulties, and the absence of the use of teats and pacifiers have been highlighted (Diagne-Guèyea *et al.*, 2011; Al Ghwass & Ahmed, 2011). To conclude, Donath *et al.* (2003), in their analysis focused on the intention to breastfeed and the practice of exclusive

breastfeeding, reported that the mother's intention to feed her child is a very strong indicator of the initiation and the duration of breastfeeding. Also, among the mothers who intended to breastfeed, 66% achieved at least the expected duration of breastfeeding (6 months). In contrast, Al Ghwass & Ahmed (2011) found no association between exclusive breastfeeding and mother's age, mother and father's education level, mother's occupational status, location and mode of delivery, parity, social class, last interval between deliveries, and baby weight at birth.

Continuous breastfeeding, complementary foods and weaning

Here, it appears that 32.5% of the investigated mothers continued breastfeeding for more than 23 months as recommended by the WHO, which recommends the continuation of breastfeeding until age 2 years or older (WHO, 2003) b, compared to 15.0% (18-23 months), 20.0% (12-18 months), 15.0% (6-12 months) and 17.5% (0 to 6 months). This percentage is higher than that reported by Traoré *et al.* (2014) who found in their study that breastfeeding up to 24 months or more was practiced by 29% of respondents. It should be noted that continued breastfeeding in the second year significantly contributes to the supply of essential nutrients that are not present in low-quality complementary foods in resource-limited areas (WHO, 2017). Prolonged breastfeeding could also be a strategy to cope with the anxiety of some mothers who do not have enough food to feed their children (Dusingizimana *et al.*, 2020). Regarding the complimentary food, all the mothers surveyed in this study claim to have introduced porridge as a complementary food although the time of introduction differs from one mother to another. This is in line with the result of the IRD (2020) according to which porridge is the complimentary food to breastfeeding most frequently served to children in the Sahelian countries including in Chad. The result reported by Dusingizimana *et al.* (2020) corroborates this fact. They pointed out that most mothers mentioned that their children started receiving foods or liquids other than breast milk between 6 and 7 months and that the first and most

common complementary food reported by all mothers was diluted porridge.

The same observation was made by Chiabi *et al.* (2019) who confirmed that the foods used for diversification were mostly home-prepared porridge. But only inappropriate diversification can lead to malnutrition in children aged 6 to 24 months (Chiabi *et al.*, 2019), because complementary foods made from local produce and processed cereals are only one of the possible solutions (IRD, 2020). We must also not lose sight of the weaning methods used. It appears that 52% of mothers or caregivers of children weaned their children gradually against 48% abruptly. The reasons given by mothers for abrupt weaning are the child's refusal to breastfeed or that he has reached the age to be weaned, as well as illnesses or the occurrence of a new pregnancy. Weaning is a natural and inevitable stage of child development.

It is a complex process that requires nutritional, immunological, biochemical, and psychological adaptations (Masala, 2019). Regarding withdrawal reasons, Chiabi *et al.* (2019) pointed out in their study that the reason for stopping breastfeeding before the age of 2 years was for 45% of mothers a personal decision and for 18% for family reasons.

Conclusion

The present study on the factors restricting the optimal practice of infant and young child feeding, conducted within the Therapeutic Nutrition Unit of the University Teaching hospital Center for Mothers and Child, was edifying and constructive. Its results showed that four out of five women did not engage in any income-generating activity, a large part (42.5%) of them were illiterate. The use of health services by mothers was significant, as shown by the results and that 70% had given birth in a health facility. The Infant and Young Child breastfeeding practices evaluated during this study showed appreciable proportions (64.94%) but are not optimal. Among the women surveyed, half of them had started breastfeeding early, 88.75% had given colostrum to their child, and more than half had introduced a food

other than milk at the appropriate time and had gradually weaned their child. These results showed that certain factors limiting OIYCF practices could have negative effects, among which we can cite home birth, illiteracy and lack of employment. This information may be useful in promoting Infant and Young Child Feeding Practices.

References

Aké-Tano O, Ekou F, Yao EK, Ekissi OT, Kpebo D, Sable P, Aka BS, Gbané M, Dagnan NS. 2014. Pratiques alimentaires des enfants de 0 à 2 ans suivis dans une structure sanitaire à Abidjan. *Revue Internationale des Sciences Médicales d'Abidjan* **16(2)**, 89-93.

Al Ghwass M, Ahmed D. 2011. Prevalence and predictors of 6-month exclusive breastfeeding in a rural area in Egypt. *Breastfeeding Medicine* **6(4)**, 191-196.

<http://dx.doi.org/10.1089/bfm.2011.0035>

ANAES. 2002. Allaitement maternel – Mise en œuvre et poursuite dans les 6 premiers mois de vie de l'enfant. Agence Nationale d'Accréditation et d'Évaluation en Santé. France.

Chiabi A, Kago D, Nguefack F, Laksira A, Nguefack S, Mah E, Simnoue D. 2019. Diversification alimentaire chez les nourrissons de 6 à 24 mois à l'hôpital régional de Garoua. *Journal de Pédiatrie et de Puériculture* **1370**, 1-6.

Diagana M, Kane H. 2016. Alimentation des nourrissons à Nouakchott : entre recommandations médicales et instructions des grand-mères. *Santé Publique* **2(28)**, 235 - 243.

<http://dx.doi.org/10.3917/spub.162.0235>

Diagne-Guèye N, Diack-Mbayea A, Draméb M, Diagnea I, Falla A, Camara B, Faye P, Syllad A, Diouf S, Sy-Signaté H, Sarre M. 2011. Connaissances et pratiques de mères sénégalaises vivant en milieu rural ou suburbain sur l'alimentation de leurs enfants, de la naissance à l'âge de six mois.

Journal de Pédiatrie et de Puériculture **24**, 161-166.

<http://dx.doi.org/10.1016/j.jp.2010.12.001>

Donath M, Amir H, the ALSPAC Study Team.

2003. The relationship between prenatal infant feeding intention and initiation and duration of breastfeeding: a cohort study. *Acta Paediatrica* **92(3)**, 352–356.

<http://dx.doi.org/10.1080/08035250310009293>

Dusingizimana T, Weber J, Ramilan T,

Iversen P, Brough L. 2020. A qualitative analysis of infant and young child feeding practices in rural Rwanda. *Public Health Nutrition*. 1 – 10.

<http://dx.doi.org/10.17/S13689880020001081>

DNTA. 2019. Enquête nationale de nutrition SMART. Direction de la Nutrition et de Technologie Alimentaire. Ministère de la Santé Publique, Tchad.

Edmond K, Zandoh C, Maria A, Amenga-Etego

S, Owusu-Agyei S, Kirkwood B. 2006. Delayed breastfeeding initiation increases risk of neonatal mortality. *Pediatrics*. **117(3)**, 380 – 386.

<http://dx.doi.org/10.1542/peds.2005-1496>

FAO, FIDA, OMS, PAM, UNICEF. 2017. L'état de la sécurité alimentaire et de la nutrition dans le monde. Renforcer la résilience face aux changements climatiques pour la sécurité alimentaire et la nutrition. Rome, FAO.

FAO, FIDA, OMS, PAM, UNICEF. 2018. L'état de la sécurité alimentaire et de la nutrition dans le monde 2018. Renforcer la résilience face aux changements climatiques pour la sécurité alimentaire et la nutrition. Rome, FAO.

Global Nutrition report. 2018. Rapport sur la nutrition mondiale 2018.

Hubin-Gayte M, Squires C. 2012. Étude de l'impact de la grossesse sur les comportements alimentaires à travers l'utilisation du questionnaire SCOFF. *Evolution. Psychiatrique* **77(2)**, 201-212.

<http://dx.doi.org/10.1016/j.evopsy.2012.01.002>

IRD. 2020. Rapport de l'étude « La filière des farines infantiles produites localement dans 6 pays sahéliens ». IRD, GRET, IRAM, UNICEF.

Loukoula M, Ntsounga M, Tine D, Sougou M, Camara D, Seck A, Toure K, Bassoum O, Faye A., Seck I. 2020. Factors associated with the appropriate complementary feeding of breastfed

children ages 6 to 23 months in the commune of Kaolack (Senegal). *International Journal of Innovation and Applied Study* **29(4)**, 1242-1252.

Lubala T, Mukuku O, Mutombo A, Lubala N, Nawej F, Mawaw P, Luboya O. 2016. Infant

feeding practices in urban and rural southern Katanga communities in Democratic Republic of Congo. *The Journal of Medical Research* **2(3)**, 65-70.

Masala B. 2019. Age moyen de sevrage dans la ville de Kamina (Cas du quartier 82), République Démocratique du Congo (RDC). *Environmental and Water Sciences, Public Health & Territorial Intelligence Journal* **3(3)**, 154-159.

Mavuta Z, Imani W, Ngimbi S, Ngoie N, Tshiswaka S, Luboya E, Tawi J, Mukuku O, Wembonyama S, Luboya O. 2018. Pratiques

alimentaires des nourrissons : Connaissances, attitudes et pratiques des mères d'une commune urbaine de la ville de Lubumbashi, République Démocratique du Congo. *Revue de l'Infirmier Congolais* **2(2)**, 109-116.

Mukuku O, Tshibanda K, Mutombo A, Lubala T, Luboya O. 2017. Facteurs influençant l'arrêt de

l'allaitement au sein avant l'âge de 12 mois dans le village de Tshamalale, République Démocratique du Congo. *Revue de l'Infirmier Congolais* **1(1)**, 17-26.

Mullany L, Katz J, Li Y, Khattry S, LeClerq S, Darmstadt G, Tielsch J. 2008. Breastfeeding Patterns, Time to Initiation, and Mortality Risk among Newborns in Southern Nepal. *Journal of*

Nutrition **138(3)**, 599-603.

<http://dx.doi.org/10.1093/jn/138.3.599>

Noirhomme-Renard F, Noirhomme Q. 2009. Les facteurs associés à un allaitement maternel prolongé au-delà de trois mois : une revue de la littérature. *Journal de Pédiatrie et de Puériculture* **22(3)**, 112-120.

<http://dx.doi.org/10.1016/j.jpp.2009.03.006>

COHA. 2016. « Le cout de la faim en Afrique. L'incidence sociale et économique de la sous-nutrition chez l'enfant au Tchad » - 2016.

OMS. 2003^a. Global strategy for infant and young child feeding. OMS & UNICEF. Genève. ISBN 92 4 156221 8.

OMS. 2003^b. Principes directeurs pour l'alimentation complémentaire de l'enfant allaité au sein. ISBN 92 75 22460 9.

OMS. 2006. Principes directeurs pour l'alimentation des enfants âgés de 6 à 24 mois qui ne sont pas allaités au sein. Genève (Suisse). ISBN 92 4 259343 5.

OMS UNICEF. 2017. Note d'orientation sur l'allaitement au sein. Organisation mondiale de la Santé.

OMS. 2019. Nutrition dans la Région africaine de l'OMS. Organisation mondiale de la Santé, Bureau régional de l'Afrique. Brazzaville. ISBN 978-929031309-0.

Onah S, Osuorah C, Ebenebe J, Ezechukwu C, Ekwochi U, Ndukwu I. 2014. Infant feeding practices and maternal socio-demographic factors that influence practice of exclusive breastfeeding among mothers in Nnewi South-East Nigeria: a cross-sectional and analytical study. *International Breastfeeding Journal* **9(6)**.

<http://dx.doi.org/10.1186/1746-4358-9-6>

PNUD. 2019. Rapport sur le développement

humain 2019. Au-delà des revenus, des moyennes et du temps présent : les inégalités de développement humain au XXI^e siècle.

Ravaoarisoa L, Rakotonirina J, Andriamiandrisoa D, Humblet P, Rakotomanga M. 2018. Habitude alimentaire des mères pendant la grossesse et l'allaitement. *Pan African Medical Journal* **29(194)**, 1-8.

<http://dx.doi.org/10.11604/pamj.2018.29.194.12973>

Samega-Janneh I, Bohler E, Holm H, Matheson I, Holmboe-Ottesen. 2001. Promoting breastfeeding in rural Gambia: combining traditional and modern knowledge. *Health Policy Plan* **16(2)**, 199-205.

<http://dx.doi.org/10.1093/heapol/16.2.199>

Sinhababu A, Mukhopadhyay D, Panja T, Saren A, Mandal N, Biswas A. 2010. Infant- and young child-feeding practices in Bankura district, zest Bengal, India. *Journal of Health Population and Nutrition* **28(3)**, 294-299.

<http://dx.doi.org/10.3329/jhpn.V28i3.5559>

The Lancet. 2008.

<http://www.thelancet.com/series/maternal-and-child-undernutrition>

The Lancet. 2013.

<http://www.thelancet.com/series/maternal-and-child-nutrition>

Traoré B, Diarra AS, Diallo H, El Fakir S, Nejari C. 2018. Consultations prénatales au centre de santé communautaire de Yirimadio. *Revue Marocaine de Santé Publique* **5(8)**, 2-8.

<http://dx.doi.org/10.34874/IMIST.PRSM/RMSP/4001>

Traoré M, Sangho H, Diagne Maty, Faye A, Sidibé A, Koné K, Sangho F. 2014. Facteurs associés à l'allaitement maternel exclusif chez les mères d'enfants de 24 mois à Bamako. *Santé Publique* **26(2)**, 259-265.

Turck D, Vidailhet M, Bocquet A, Bressond JL, Briende A, Chouraouf JP, Darmaung D, Dupontd (secrétaire) C, Freluth ML, Girardeth JP, Gouletd O, Hankardi R, Rieuj D, Simeonik U. 2013. Allaitement maternel : les bénéfices pour la santé de l'enfant et de sa mère. *Archive de Pédiatrie* **20**, 29-48.

UNICEF. 2011. Différentes formes de malnutrition. (Consulté 25/02/2021).

[https://www.unicef.fr/sites/default/files/userfiles/Le s différentes formes de malnutrition Unicef France juillet 2011\(1\).pdf](https://www.unicef.fr/sites/default/files/userfiles/Le%20s%20diff%C3%A9rentes%20formes%20de%20malnutrition%20Unicef%20France%20juillet%202011(1).pdf)

UNICEF. 2013. Améliorer la nutrition de l'enfant : Un objectif impératif et réalisable pour le progrès mondial. ISBN : 978-92-806-4687-0.

UNICEF. 2019. La Situation des enfants dans le monde 2019. Enfants, nourriture et nutrition : Bien grandir dans un monde en mutation. New York. p 258

UNHCR. 2011. Manuel pour l'alimentation sélective : la prise en charge de la malnutrition dans les situations d'urgence.