



## **Factors Associated with the Implementation of the WHO Breastfeeding Recommendations in Momo Division, North-West Region of Cameroon**

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### **Authors' contributions**

*This work was carried out in collaboration between both authors. Author NMB designed and carried out the study, performed the statistical analysis, drafted the protocol and wrote the first draft of the manuscript. Author EAR supervised the work from the design of the study to the write up and editing of the manuscript. Both authors read and approved the final manuscript.*

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### **ABSTRACT**

Breastfeeding is essential to break the spiteful cycle of malnutrition in children. In spite of the WHO recommendations on optimum breastfeeding practices and their extensively acknowledged benefits, adherence to these recommendations in Cameroon remains incredibly low. The aim of this study was to identify the factors associated with the implementation of the WHO breastfeeding recommendations among mothers whose children are aged 0 to 24 months in Momo Division, Cameroon. To achieve this goal, 540 mothers attending 22 health units in the 5 sub divisions of Momo division completed structured interviewer administered questionnaire. Through this questionnaire, information on their socioeconomic and demographic characteristics, their knowledge and cultural beliefs about breastfeeding practices and the characteristics of their babies were collected. Results show that 51.5% of babies were girls and 46.1% of mothers had secondary education as their highest level of education. The monthly household income of most (80%) of the mothers was less than 100000frs CFA. Factors found to influence pre-lacteal feeding were mode of delivery, mother's attitude on the type of first food to be given to the baby and birth order.

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Breastfeeding initiation within one hour following delivery was associated with place of delivery and mode of delivery. Exclusive breastfeeding was influenced by breast problems, mother's employment status and misconceptions. The only factor associated with frequency of breastfeeding was the infant's age. Duration of breastfeeding was associated with birth weight, and maternal knowledge on recommended duration of breastfeeding. The main impairments to breastfeeding practices were mistaken ideas based on misinformation, inadequate or no maternity leave, caesarian method of delivery, delayed breast milk secretion, breast problems and non-satiation of the baby after breastfeeding. The misconceptions noticed amongst mothers in this Division was the belief that breast milk alone is not enough to meet the nutritional needs of the baby for up to six months, expressed breast milk should not be fed to the baby and that infants below 6 months need water to quench their thirst. Maternal knowledge on breastfeeding was good as many knew the importance of breast milk.

*Keywords: Breastfeeding; associated factors; WHO recommendations; Momo Division.*

## 1. INTRODUCTION

Malnutrition is a public health problem worldwide, children aged 0-59 months being the most affected. Countries in West and Central Africa including Cameroon are the most concerned by this calamity [1]. Among the causes of malnutrition, the inadequate breastfeeding seems one of the most significant, knowing that breastfeeding determines the optimal development of physical and mental capacity, immunity and correct feeding habits, and prevent the adverse consequences of nutrition and health status of children [2]. Breastfeeding is a unique way of providing ideal nutrition as breast milk contains all the nutrients needed by the infant for healthy growth and development [2]. Breastfeeding is of great significance for the infant, the mother and the family as it results in improved child and maternal morbidity and mortality [2]. Thus, breastfeeding has the single largest potential impact on child morbidity and mortality of any preventive intervention [2].

Optimal breastfeeding practices recommended by World Health Organization (WHO) include initiation of breastfeeding within the first hour after delivery, exclusive breastfeeding from 0 to 6 months and continued breastfeeding until 24 months with optimal complementary feeding from 6 months [2]. It is also recommended that children should be breastfed eight to twelve times in a day [3]. The rates of these optimal breastfeeding practices remain abysmally low especially in developing countries regardless of overwhelming scientific evidence to support the importance of optimal breastfeeding practices for child mortality, morbidity and malnutrition, and non-communicable diseases in adult life. In developing countries, only 39% of infants are

breastfed up to 24 months of age and only 38% of infant age 0-6 months benefit from exclusive breastfeeding [4]. The rate of exclusive breastfeeding in West and Central Africa (28%) remains among the lowest in the world [5].

Several studies have shown different maternal, household, societal and infant factors associated with breastfeeding practices, including maternal knowledge on breastfeeding, maternal employment status, level of education of mother, level of income of household, region and area of residence (urban, rural), cultural behaviors, healthcare system, age, gender and number of children [6-10]. These factors affect breastfeeding and exclusive breastfeeding rates in different directions and to varying degrees depending on the region and culture [11]. A study within specific communities is therefore very important as evidence generated from this study can be used to inform, design and implement interventions and policies to improve breastfeeding and consequently child health and nutrition in these communities and similar settings. Hence, the aim of this study was to identify the socio demographic, economic and cultural factors associated with the implementation of the WHO breastfeeding recommendations in Momo Division, an area located in the North-West Region of Cameroon.

## 2. MATERIALS AND METHODS

### 2.1 Study Area

The study was conducted in 22 health facilities in Momo Division. Momo Division, one of the seven Divisions in the North West Region of Cameroon is inhabited by 138, 693 people, with a population

density of 77.40 inhabitants per km<sup>2</sup>. The majority of the population are farmers, semi-skilled or unskilled laborers. This division is divided into five Sub Divisions: Batibo, Mbengwi, Ngie, Njikwa and Widikum with its head quarter being Mbengwi [12]. It has a surface area of 1792 km<sup>2</sup>. The road network in this Division is very poor and because of this the status of health facility is also poor [12].

## **2.2 Research Design, Recruitment of Participants and Data Collection**

The study utilized a descriptive cross-sectional study design to determine the factors associated with breastfeeding practices. The survey was carried out from August to November 2017.

The study was a random sample of 540 mothers from all the five sub Divisions of Momo whose breastfed children were aged between 0 and 24 months and were either breastfeeding or not at the time of the study. The number of mothers included in the study exceeds that expected from Fishers formula for sample size [13].

These were mothers who came to the health facility implied in the study either for pediatric consultations or for vaccination of their children and gave their informed consent to participate in the study. A pre-tested structured interviewer questionnaire which was self-administered by literate mothers and interviewer-administered for those who could not read, was used to collect data from the study participants.

The questionnaire included various factors that had a potential effect on breastfeeding practices. These included maternal age, level of education, parity, matrimonial status, level of income, type of delivery, professional status, level of education, gender, birth weight of the baby, problems faced during breastfeeding and level of maternal knowledge on child nutrition, as well as attitude and beliefs on breastfeeding etc.

## **2.3 Data Processing and Analysis**

After collecting the data, the database was then cleaned and a code was ascribed to each data. The data were entered using Microsoft Excel 2011. The data were transported to SPSS version 20.0 for statistical analysis. Odds ratio was calculated to assess the relative risk in order to determine the strength of associations.

Frequency distributions, bar charts and tables were produced using Microsoft Excel 2011.

## **3. RESULTS AND DISCUSSION**

### **3.1 Characteristics of the Study Population**

#### **3.1.1 Characteristics of the babies**

A total of 540 babies were surveyed and their characteristics compiled in Table 1. 52% of the children were girls and 48% were boys. Most of the children (61.5%) were of age 0-6 months, followed by the age group 7-13 months (28%), and 14-24 months old (10.6%). Concerning the birth weight, 10% of the children weighted below 2.5 kg at birth meanwhile 82% of them had the normal birth weight (2.5-4 kg), and 6.7% above 4kg. Most of the births were single births (96.85%) while twins constituted only 3.15%. For the birth order, 34% of the children were the first child, 25% of them were second, 17% were third, and 25% fourth and above. Most of the mothers (89%) gave birth in a health unit, while 11% gave birth at home. The mode of delivery of the babies was predominantly normal (85%) and the rest (15%) were through a caesarian section.

#### **3.1.2 Socio-economic and demographic characteristics of the mothers**

Socioeconomic and demographic characteristics of the mothers are presented in Table 2. Results show that the mothers surveyed were relatively young with most of them being below 30 years (74%), whereas 23% were in the age group of 31 - 40 years, and only 2.6% were above 40 years. The matrimonial status varies greatly among the mothers, with 75.4% of them being married and 24.6% single, divorced or widows. This is an indication that majority of children are raised in family units. Concerning level of education, 2.6% had no formal schooling, 39% had primary school as their highest level of education, close to half of the mothers (46%) ended with secondary education level and only 12% attended higher education. Pertaining to the family income, approximately the half of the studied population (49%) had an income between 50,000 and 100,000 CFAF, whereas 31% had a monthly income below 50,000 CFAF. A percentage of 15.9% of the mothers had an income above 100,000 CFAF, with a few women (4.4%) above 300,000 CFAF. Most of the mothers (62%) were self-employed and 28.2% unemployed, meanwhile 9.6% of them had paid jobs.

**Table 1. Demographic characteristics of the baby**

Characteristics	Category	Number	Percentage
Sex	Boy	262	48.5
	Girl	278	51.5
Age (months)	0-6	332	61.5
	7-13	151	28
	14-24	57	10.6
Birth weight (kg)	Below 2.5	59	10.9
	2.5-4	445	82.4
	Above 4	36	6.7
Nature of birth	Single birth	531	98.3
	Twins	9	1.7
Birth order	First	182	33.7
	Second	134	24.8
	Third	89	16.5
	Fourth and above	135	25.0
Place of delivery	Health unit	479	88.7
	At home	61	11.3
Mode of delivery	Normal	459	85.0
	Caesarian section	81	15.0

**Table 2. Socio-economic and demographic characteristics of the mothers**

Characteristics	Category	Number	Percentage
Age (years)	Below 30	400	74.1
	31-40	126	23.3
	Above 40	14	2.6
Marital status	Married	408	75.4
	Single	113	20.9
	Divorced	13	2.4
	Widow	6	1.3
Level of education	No formal education	14	2.6
	Primary education	210	38.9
	Secondary education	249	46.1
	Higher education	67	12.4
Employment status	Paid job	52	9.6
	Self-employed	336	62.2
	Unemployed	152	28.2
Monthly household income (CFAF)	Below 50.000	168	31.1
	50.000-100.000	262	48.5
	100001-300000	86	15.9
	Above 300000	24	4.4

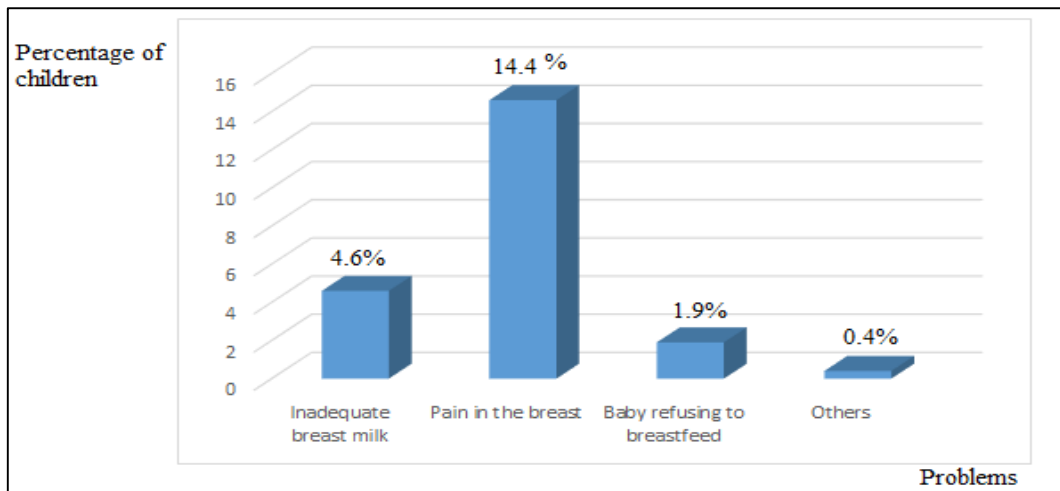
### 3.2 Maternal Knowledge, Attitude and Beliefs on Breastfeeding

Table 3 gives information about knowledge, attitude and beliefs of the mothers concerning breastfeeding. Most of the mothers (80.7%) had the appropriate knowledge on breastfeeding in the domain of breast milk being the best food for the baby. Over half of the respondents (63.5% and 60% respectively) knew that breastfed babies are healthier than formula-fed infant and that the recommended period for breastfeeding is at least 2 years. Only 37% of them knew that

exclusive breast feeding has health benefits for the mother. Most of the mothers (88.7% and 83.7% respectively) had a positive attitude with respect to feeding the baby with colostrum and giving a baby breast milk as the first food after birth. About half of the respondents (50.2%) had a good attitude concerning feeding the baby with expressed breast milk. Only 35.6% of respondents believed that breast milk alone is enough food for the baby for up to six months and 65.4% believed that infants below 6 months do not need extra water, as shown in Table 3.

**Table 3. Maternal knowledge, attitudes and beliefs on breastfeeding**

Variable	Statement	N (%)
Knowledge	Breast milk is the best food for babies.	436 (80.7)
	Exclusive breastfeeding has health benefits for the mother	200 (37.0)
	Breastfed babies are healthier.	343 (63.5)
Attitudes	Recommended period for breastfeeding is at least 2 years.	322 (59.6)
	Colostrum given to the baby.	479 (88.7)
	Breast milk as first food after birth.	452 (83.7)
Beliefs	Expressed breast milk fed to the baby.	271 (50.2)
	Infants below 6 months need water.	355 (65.6)
	Breast milk alone is enough for six months.	192 (35.6)



**Fig. 1. Problems experienced during breastfeeding**

**3.3 Problems Faced during Breastfeeding**

Fig. 1 presents difficulties encountered by the mother and their children during breastfeeding. Although a greater part of the participants (78.7%) did not encounter any problem while breastfeeding, there was still a significant number of the respondents (21.3%) who complained about breast problems. Some of the problems experienced by the mothers include pain in the breast (14.4%), inadequate milk (4.6%) and baby refusing to breastfeed (1.9%).

**3.4 Factors Associated with Breastfeeding Practices**

**3.4.1 Factors associated with pre-lacteal feeding**

Relationship between some factors and pre-lacteal feeding is presented in Table 4 which shows a significant relationship between the birth order of the child and pre-lacteal feeding (p=0.002). The first children were about two

times more likely to be given food before the normal flow of breast milk. A significant association also exists between mode of delivery and pre-lacteal feeding, babies delivered through caesarian delivery being more likely to receive pre-lacteal feeding (p=0.000). This could be explained by the fact that the mothers who deliver through a caesarian section require some time to recover from the anesthesia. Indeed, a previous study showed that cesarean delivery is a significant risk factor for pre-lacteal feeding in the first week of life [9]. Mother’s attitude on the type of first food that should be given to the baby also significantly affect the pre-lacteal feeding of children (p=0.002). Generally, pre-lacteal feeding is caused by delayed milk secretion in some mothers.

**3.4.2 Factors associated with breastfeeding initiation within one hour**

Table 5 presents factors associated with breastfeeding within one hour following delivery. There is a significant association between place

of delivery and initiation of breastfeeding (p=0.000). Children born in health facilities are 5.2 times more likely to be breastfed within an hour following delivery than children born at home. This is probably because in health units, there is the promotion of good breastfeeding practices. Hence, women who deliver at home miss out on the professional support and encouragement needed to establish early breastfeeding. Moreover, several studies have proved institutional delivery to be a crucial factor in the early adoption of breastfeeding [10-13].

Also, mode of delivery significantly affects period of initiation of breastfeeding (p=0.000), the latter being less likely to be timely in mothers who had given birth by caesarian. Mothers who delivered their infants by the normal vaginal method were

more likely to practice early initiation of breastfeeding compared to mothers who delivered by the caesarian method. Children delivered normally are 7.7 times more likely to receive breast milk within one hour than those born through caesarian section. This delayed breastfeeding initiation is most probably caused by the physical condition of the mother after delivery whereby some mothers claimed that they did not have a good health status to be able to breastfeed or the painful conditions associated with caesarian section. Fatigue and limited mobility also reduce the impetus of cesarean section mothers to breastfeed. Many studies have reported the same results [14-16]. Contrarily, DiGirolamo et al. [17] concluded that type of delivery (vaginal versus caesarian) had no significant influence on breastfeeding practices.

**Table 4. Factors associated with pre-lacteal feeding**

Factors	OR	P-value	95% C.I. for OR	
			Lower	Upper
Birth order(ref:1)		.002		
2	.526	.025	.083	1.336
3	.391	.007	.293	1.142
4	.326	.001	.579	1.968
Mode of delivery (ref=normal)				
Caesarian	.232	.000	.134	.403
Breast milk first (ref=true)				
False	.358	.002	.189	.675

*P value < 0.05 indicates a significant association ref=reference category; OR=odds ratio; C.I=Confidence Interval*

**Table 5. Factors associated with breastfeeding Initiation within one hour**

Factors	OR	P value	r value	95% C.I. for OR	
				Lower	Upper
Place of delivery (ref=health unit)					
Home	.199	.000	-1.61	.097	.409
Mode of delivery (ref=vaginal)					
Caesarian	.130	.000	-2.04	.065	.262

*P value < 0.05 indicates a significant association; ref=reference category; OR=Odds Ratio, C.I=Confidence Interval, r value=correlation coefficient*

**3.4.3 Factors associated with exclusive breastfeeding**

Association between exclusive breastfeeding and some studied factors is presented in Table 6. It shows that there is a significant association between employment status of mothers and the practice of exclusive breastfeeding up to 6 months. Unemployed mothers were 1.6 times more likely to breastfeed their children exclusively for six months than mothers who

were self-employed or had paid jobs. This data is in concordance with data reported in numerous previous studies [18-21]. This could be justified by the fact that unemployed mothers are constantly at home with their babies and are more likely to breastfeed them for as long as 6 months. More so, female workers in Cameroon are usually granted 14 weeks of maternity leave which is equivalent to approximately 3 months [22]. Under these conditions, mothers are urged to resort to the supplementation of breast milk

substitutes before 3 months so that their infants familiarize to bottle feeding during their absence. Pain in the breast during breastfeeding also significantly influenced exclusive breast feeding (p=0.014). Mothers who had no pain during exclusive breastfeeding period are 1.9 times more likely to breastfeed their children exclusively for six months. The consequence of these difficulties is a negative experience with breastfeeding which is followed by a reduction in mothers' confidence to breastfeed their infants, hence, causing early cessation of exclusive breastfeeding [23]. Concordantly, other similar studies carried out had the same findings [18,24, 25].

The knowledge of mothers on exclusive breastfeeding until 6 months is significantly

associated with the duration of exclusive breastfeeding (p=0.000). Mothers who believed that breast milk alone is not enough food for the baby for up to six months are less likely to breastfeed their children exclusively for six months (Table 6). Another study also showed that cultural beliefs concerning breastfeeding have a significant influence on its implementation [26]. The mothers' knowledge of exclusive breastfeeding was generally good in this study, although some remarkable gaps were identified. Mother's inadequacy of breastfeeding knowledge was expressed by the fact that most of them did not know that exclusive breastfeeding has maternal health benefits [27] and that breast milk can be expressed, stored safely and given to the child in the absence of the mother.

**Table 6. Factors associated with exclusive breastfeeding**

Factors	OR	P value	95% C.I. for OR	
			Lower	Upper
Difficulties BF (ref=experienced)				
No problem	1.976	.014	1.149	3.400
Professional status (ref=Unemployment)				
Self employed	.604	.039	.358	1.020
Paid job	.685	.030	.289	1.626
Breast milk alone is enough	.119	.000	.076	.185

*P value < 0.05 indicates a significant association; ref=reference category; OR=Odds Ratio; C.I.=Confidence Interval; r=correlation coefficient*

**Table 7. Factors associated with frequency of breastfeeding**

	OR	P-value	95% C.I. for OR	
			Lower	Upper
Age (ref=0-6months)				
7-13 months	.453	.001*	.285	.720
14-24 months	.372	.004*	.190	.729

*P value < 0.05 indicates a significant association; ref=reference category; OR=Odds Ratio; C.I.=Confidence Interval*

**Table 8. Factors associated with duration of breastfeeding**

Factors	OR	P value	95% C.I. for OR	
			Lower	Upper
Infant weight (kg) (ref=Below 2.5)				
2.5-4	.203	.017*	.055	.752
Above 4	.262	.022*	.025	2.716
Age (months) (ref=0-6)				
7-13	.323	.017	.457	4.883
14-24	.349	.024	.298	10.769
Maternal knowledge (ref=True)				
False	.164	.012*	.040	.669

*P value < 0.05 indicates a significant association; ref=reference category; OR=Odds Ratio; C.I.=Confidence Interval*

### 3.4.4 Factors associated with frequency and duration of breastfeeding

Tables 7 and 8 respectively indicate the factors linked to frequency and duration of breastfeeding. Table 7 shows that there is a significant association between baby's age and frequency of breast feeding. Children above 6 months are less likely to breastfeed more than 8 times a day. Concerning duration (Table 8), there is a significant association existing between infant weight at birth and the duration of breastfeeding. Children who were born weighing less than 2.5 kg were 5 times more likely to be breastfed for 2 or more years than children who were born weighing 2.5 kg or more. There is also a significant association between age of the baby and duration of breastfeeding. This means that as children grow older, they are more likely to stop breastfeeding. Also, mother's knowledge on recommended duration of breastfeeding until 2 years and beyond significantly affects duration of breastfeeding ( $p=0.012$ ). Mothers who had the knowledge of the recommended period were 6 times more likely to breastfeed their children for up to two years and beyond. The other factors did not significantly affect the duration of breast feeding. Also, mother's knowledge on recommended duration of breastfeeding positively affected the duration of breastfeeding the child. This information is affirmed by results presented by Chambers, et al. [28] and Pascale, et al. [29] that showed positive association between mothers' knowledge and breastfeeding practice.

## 4. CONCLUSION

The factors found to be associated with breastfeeding practices include; the birth order of the child, mode of delivery (normal or caesarian), birth weight, maternal knowledge and beliefs on recommended breastfeeding practices, professional status of the mother and difficulties during breastfeeding period. These factors principally affect pre-lacteal feeding, breastfeeding initiation, exclusivity, frequency and duration. Nutrition interventions concerning breastfeeding should focus more on these factors for a greater implementation of WHO recommendations.

## CONSENT AND ETHICAL APPROVAL

The study obtained the ethical clearance from the Regional Hospital Institutional Review Board. Authorization to conduct the research was granted by the College of Technology, University

of Bamenda. A verbal informed consent was sought from each study participant before the administration of the questionnaire.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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