

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

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. 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

30 baby and that infants below 6 months need water to quench their thirst. Maternal knowledge on
31 breastfeeding was good as many knew the importance of breast milk.

32

33 **Keywords:** Breastfeeding, associated factors, WHO recommendations, Momo Division.

34 **1. Introduction**

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

46 Optimal breastfeeding practices recommended by World Health Organization (WHO) include
47 initiation of breast feeding within the first hour after delivery, exclusive breastfeeding from 0 to
48 6 months and continued breastfeeding until 24 months with optimal complementary feeding from
49 6 months [2]. It is also recommended that children should be breastfed eight to twelve times in a
50 day [3]. The rates of these optimal breastfeeding practices remain abysmally low especially in
51 developing countries regardless of overwhelming scientific evidence to support the importance
52 of optimal breastfeeding practices for child mortality, morbidity and malnutrition, and non-
53 communicable diseases in adult life. In developing countries, only 39% of infants are breastfed
54 up to 24 months of age and only 38% of infant age 0-6 months benefit from exclusive breast
55 feeding [4]. The rate of exclusive breastfeeding in West and Central Africa (28%) remains
56 among the lowest in the world [5].

57 Several studies have shown different maternal, household, societal and infant factors associated
58 with breastfeeding practices, including maternal knowledge on breastfeeding, maternal

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

69 **2. MATERIALS AND METHOD**

70 **2.1 Study Area**

71 The study was conducted in 22 health facilities in Momo Division. Momo Division, one of the
72 seven Divisions in the North West region of Cameroon is inhabited by 138, 693 people, with a
73 population density of 77.40 inhabitants per km². The majority of the population are farmers,
74 semi-skilled or unskilled laborers. This division is divided into five Sub Divisions: Batibo,
75 Mbengwi, Ngie, Njikwa and Widikum with its head quarter being Mbengwi [12]. It has a surface
76 area of 1792 km². The road network in this Division is very poor and because of this the status of
77 health facility is also poor [12].

78 **2.2 Research Design, Recruitment of participants and data collection**

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

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

85 These were mothers who came to the health facility implied in the study either for pediatric
86 consultations or for vaccination of their children and gave their informed consent to participate in

87 the study. A pre-tested structured interviewer questionnaire which was self-administered by
88 literate mothers and interviewer-administered for those who could not read, was used to collect
89 data from the study participants.

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

95 **2.3 Ethical Considerations**

96 The study obtained the ethical clearance from the Regional Hospital Institutional Review Board.
97 Authorization to conduct the research was granted by the College of Technology, University of
98 Bamenda. A verbal informed consent was sought from each study participant before the
99 administration of the questionnaire.

100 **2.4 Data Processing and Analysis.**

101 After collecting the data, the database was then cleaned and a code was ascribed to each data.
102 The data were entered using Microsoft Excel 2011. The data were transported to SPSS version
103 20.0 for statistical analysis. Odds ratio was calculated to assess the relative risk in order to
104 determine the strength of associations. Frequency distributions, bar charts and tables were
105 produced using Microsoft Excel 2011.

106 **3. Results and Discussion**

107 **3.1 Characteristics of the study population**

108 **3.1.1 Characteristics of the babies**

109 A total of 540 babies were surveyed and their characteristics compiled in Table 1. 52% of the
110 children were girls and 48% were boys. Most of the children (61.5%) were of age 0-6 months,
111 followed by the age group 7-13 months (28%), and 14-24 months old (10.6%). Concerning the
112 birth weight, 10% of the children weighted below 2.5kg at birth meanwhile 82% of them had the
113 normal birth weight (2.5 -4 kg), and 6.7% above 4kg. Most of the births were single births

114 (96.85%) while twins constituted only 3.15%. For the birth order, 34% of the children were the
 115 first child, 25% of them were second, 17% were third, and 25% fourth and above. Most of the
 116 mothers (89%) gave birth in a health unit, while 11% gave birth at home. The mode of delivery
 117 of the babies was predominantly normal (85%) and the rest (15%) were through a caesarian
 118 section.

119 **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

120 3.1.2 Socio-economic and Demographic Characteristics of the Mothers

121 Socioeconomic and demographic characteristics of the mothers are presented in Table 2. Results
 122 show that the mothers surveyed were relatively young with most of them being below 30 years
 123 (74%), whereas 23% were in the age group of 31 - 40 years, and only 2.6% were above 40 years.
 124 The matrimonial status varies greatly among the mothers, with 75.4% of them being married and
 125 24.6% single, divorced or widows. This is an indication that majority of children are raised in
 126 family units. Concerning level of education, 2.6% had no formal schooling, 39% had primary
 127 school as their highest level of education, close to half of the mothers (46%) ended with
 128 secondary education level and only 12% attended higher education. Pertaining to the family
 129 income, approximately the half of the studied population (49%) had an income between 50,000

130 and 100,000 CFAF, whereas 31% had a monthly income below 50,000 CFAF. A percentage of
 131 15.9% of the mothers had an income above 100,000 CFAF, with a few women (4.4%) above
 132 300.000 CFAF. Most of the mothers (62%) were self-employed and 28.2% unemployed,
 133 meanwhile 9.6% of them had paid jobs.

134

135 **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

136 **3.2 Maternal Knowledge, Attitude and Beliefs on Breastfeeding.**

137 Table 3 gives information about knowledge, attitude and beliefs of the mothers concerning
 138 breastfeeding. Most of the mothers (80.7%) had the appropriate knowledge on breastfeeding in
 139 the domain of breast milk being the best food for the baby. Over half of the respondents (63.5%
 140 and 60% respectively) knew that breastfed babies are healthier than formula-fed infant and that
 141 the recommended period for Breast feeding is at least 2 years. Only 37% of them knew that
 142 exclusive breast feeding has health benefits for the mother. Most of the mothers (88.7% and
 143 83.7% respectively) had a positive attitude with respect to feeding the baby with colostrum and
 144 giving a baby breast milk as the first food after birth. About half of the respondents (50.2%) had

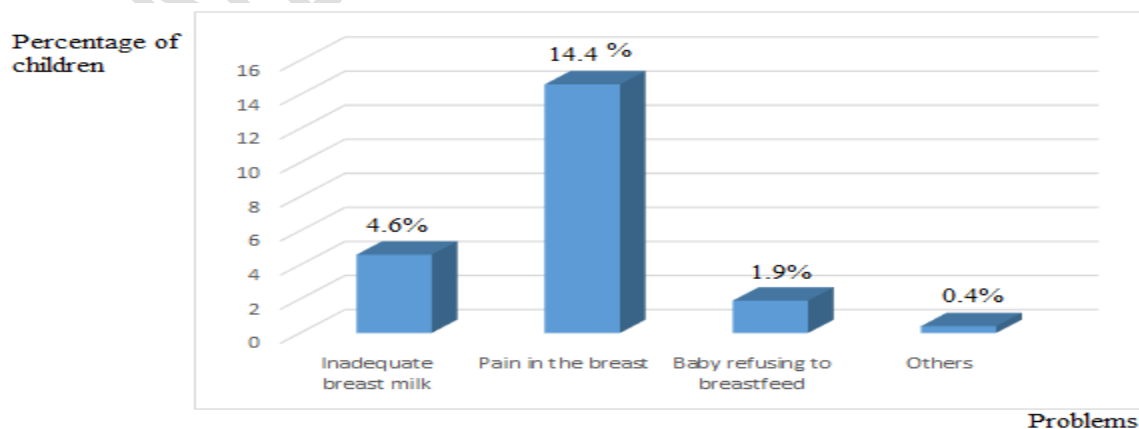
145 a good attitude concerning feeding the baby with expressed breast milk. Only 35.6% of
 146 respondents believed that breast milk alone is enough food for the baby for up to six months and
 147 65.4% believed that infants below 6 months do not need extra water, as shown in Table 3.

148 **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)
	Recommended period for breastfeeding is at least 2 years.	322 (59.6)
Attitudes	Colostrum given to the baby.	479 (88.7)
	Breast milk as first food after birth.	452 (83.7)
	Expressed breast milk fed to the baby.	271 (50.2)
Beliefs	Infants below 6 months need water.	355 (65.6)
	Breast milk alone is enough for six months.	192 (35.6)

149 **Problems faced during Breastfeeding**

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



156 **Figure 1.** Problems experienced during breastfeeding

157

158 **3.3 Factors associated with Breastfeeding Practices**

159 **3.3.1 Factors associated with Pre-Lacteal Feeding**

160 Relationship between some factors and pre-lacteal feeding is presented in table 4 which
161 shows a significant relationship between the birth order of the child and pre-lacteal feeding
162 ($p=0.002$). The first children were about two times more likely to be given food before the
163 normal flow of breast milk. A significant association also exists between mode of delivery and
164 pre-lacteal feeding, babies delivered through caesarian delivery being more likely to receive pre-
165 lacteal feeding ($p=0.000$). This could be explained by the fact that the mothers who deliver
166 through a caesarian section require some time to recover from the anesthesia. Indeed, a previous
167 study showed that cesarean delivery is a significant risk factor for pre-lacteal feeding in the first
168 week of life [9]. Mother's attitude on the type of first food that should be given to the baby also
169 significantly affect the pre-lacteal feeding of children ($p=0.002$). Generally, pre-lacteal feeding is
170 caused by delayed milk secretion in some mothers.

171

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173

174 **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.

175

176 3.3.2 Factors associated with Breastfeeding initiation within one hour

177 Table 5 presents factors associated with breastfeeding within 1h following delivery. There is a
 178 significant association between place of delivery and initiation of breastfeeding (p=0.000).
 179 Children born in health facilities are 5.2 times more likely to be breastfed within an hour
 180 following delivery than children born at home. This is probably because in health units, there is a
 181 promotion of good breastfeeding practices. Hence, women deliver at home miss out on the
 182 professional support and encouragement needed to establish early breastfeeding. Moreover,
 183 several studies have proved institutional delivery to be a crucial factor in the early adoption of
 184 breastfeeding [10-13].

185 Also, mode of delivery significantly affects period of initiation of breastfeeding (p=0.000), the
 186 latter being less likely to be timely in mothers who had given birth by caesarian. Mothers who
 187 delivered their infants by the normal vaginal method were more likely to practice early initiation
 188 of **breastfeeding** compared to mothers who delivered by the caesarean method. Children
 189 delivered normally are 7.7 times more likely to receive breast milk within one hour than those
 190 born through caesarian section. This delayed breastfeeding initiation is most probably caused by
 191 the physical condition of the mother after delivery whereby some mothers claimed that they did
 192 not have a good health status to be able to breastfeed or the painful conditions associated with
 193 caesarean section. Fatigue and limited mobility also reduce the impetus of cesarean section
 194 mothers to breastfeed. Many studies have reported the same results [14-16]. Contrarily,
 195 DiGirolamo *et al* [17] concluded that type of delivery (vaginal versus caesarean) had no
 196 significant influence on BF practices.

197

198 **Table 5.** Factors associated with Breastfeeding Initiation within one hour

Factors	OR	P value	r value	95% C.I. for OR
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				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

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

201 3.3.3 Factors Associated with Exclusive Breastfeeding

202 Association between exclusive breastfeeding and some studied factors is presented in Table 6. It
 203 shows that there is a significant association between employment status of mothers and the
 204 practice of exclusive breastfeeding up to 6 months. Unemployed mothers were 1.6 times more
 205 likely to breastfeed their children exclusively for six months than mothers who were self-
 206 employed or had paid jobs. This data is in concordance with data reported in numerous previous
 207 studies [18-21]. This could be justified by the fact that unemployed mothers are constantly at
 208 home with their babies and are more likely to breastfeed them for as long as 6 months. More so,
 209 female workers in Cameroon are usually granted 14 weeks of maternity leave which is
 210 equivalent to approximately 3 months [22]. Under these conditions, mothers are urged to resort
 211 to the supplementation of breast milk substitutes before 3 months so that their infants familiarize
 212 to bottle feeding during their absence.

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

219 The knowledge of mothers on exclusive breastfeeding until 6 months is significantly associated
 220 with the duration of exclusive breastfeeding ($p=0.000$). Mothers who believed that breast milk
 221 alone is not enough food for the baby for up to six months are less likely to breastfeed their
 222 children exclusively for six months (Table 6). Another study also showed that cultural beliefs

223 concerning breastfeeding have a significant influence on its implementation [26]. The mothers'
 224 knowledge of exclusive breastfeeding was generally good in this study, although some
 225 remarkable gaps were identified. Mother's inadequacy of breastfeeding knowledge was
 226 expressed by the fact that most of them did not know that exclusive breast feeding has maternal
 227 health benefits [27] and that breast milk can be expressed, stored safely and given to the child in
 228 the absence of the mother.

229 **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

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

231 3.3.4 Factors associated with Frequency and Duration of Breastfeeding

232 Tables 7 and 8 respectively indicate the factors linked to frequency and duration of
 233 breastfeeding. Table 7 shows that there is a significant association between baby's age and
 234 frequency of breast feeding. Children above 6 months are less likely to breastfeed more than 8
 235 times a day. Concerning duration (Table 8), there is a significant association existing between
 236 infant weight at birth and the duration of breastfeeding. Children who were born weighing less
 237 than 2.5kg were 5 times more likely to be breastfed for 2 or more years than children who were
 238 born weighing 2.5kg or more. There is also a significant association between age of the baby and
 239 duration of BF. This means that as children grow older they are more likely to stop
 240 breastfeeding. Also, mother's knowledge on recommended duration of Breast feeding until 2
 241 years and beyond significantly affects duration of breastfeeding (p=0.012). Mothers who had the
 242 knowledge of the recommended period were 6 times more likely to breastfeed their children for
 243 up to two years and beyond. The other factors did not significantly affect the duration of Breast

244 feeding. Also, mother's knowledge on recommended duration of Breast feeding positively
 245 affected the duration of Breastfeeding the child. This information is affirmed by results presented
 246 by Chambers *et al.* [28] and Pascale *et al.* [29] that showed positive association between
 247 mothers' knowledge and Breast feeding practice.

248

249

250 **Table 7.** Factors associated with Frequency of Breastfeeding

	OR	P-value	95% C.I. for OR	
			Lower	Upper
Age (ref=0-6months)		.000*		
7-13 months	.453	.001*	.285	.720
14-24 months	.372	.004*	.190	.729

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

252 **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)		.006*		
2.5-4	.203	.017*	.055	.752
Above 4	.262	.022*	.025	2.716
Age (months) (ref=0-6)		.011		
7-13	.323	.017	.457	4.883
14-24	.349	.024	.298	10.769
Maternal knowledge (ref=True)				
False	.164	.012*	.040	.669

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

254 **4. CONCLUSION**

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

261

262 Authors have declared that no competing interests exist.

263

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