

Original Research Article

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 [6]. 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

Comment [LADC1]: Out of order

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 [10-14]. These factors affect breastfeeding and exclusive breast feeding rates in
62 different directions and to varying degrees depending on the region and culture [6]. A study
63 within specific communities is therefore very important as evidence generated from this study
64 can be used to inform, design and implement interventions and policies to improve breastfeeding
65 and consequently child health and nutrition in these communities and similar settings. Hence, the
66 aim 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.

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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 km. 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 [7]. 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 [7].

Comment [LADC3]: Or km²?

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 [8].

Comment [LADC4]: Are there any exclusion criteria?

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.

99 **2.4 Data Processing and Analysis.**

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

105 **3. Results and Discussion**

106 **3.1 Characteristics of the study population**

107 **3.1.1 Characteristics of the babies**

108 A total of 540 babies were surveyed and their characteristics compiled in Table 1. 52% of the
109 children were girls and 48% were boys. Most of the children (61.5%) were of age 0-6 months,
110 followed by the age group 7-13 months (28%), and 14-24 months old (10.6%). Concerning the
111 birth weight, 10% of the children weighted below 2.5kg at birth meanwhile 82% of them had the
112 normal birth weight (2.5 -4 kg), and 6.7% above 4kg. Most of the births were single births
113 (96.85%) while twins constituted only 3.15%. For the birth order, 34% of the children were the

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

118 **Table 1.** Demographic Characteristics of the Baby

Characteristics	Category	Number	(%)
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)	< 2.5	59	10.9
	2.5-4	445	82.4
	> 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

119 **3.1.2 Socio-economic and Demographic Characteristics of the Mothers**

120 Socioeconomic and demographic characteristics of the mothers are presented in Table 2. Results
 121 show that the mothers surveyed were relatively young with most of them being below 30 years
 122 (74%), whereas 23% were in the age group of 31 - 40 years, and only 2.6% were above 40 years.
 123 The matrimonial status varies greatly among the mothers, with 75.4% of them being married and
 124 24.6% single, divorced or widows. This is an indication that majority of children are raised in
 125 family units. Concerning level of education, 2.6% had no formal schooling, 39% had primary
 126 school as their highest level of education, close to half of the mothers (46%) ended with
 127 secondary education level and only 12% attended higher education. Pertaining to the family
 128 income, approximately the half of the studied population (49%) had an income between 50,000
 129 and 100,000 CFAF, whereas 31% had a monthly income below 50,000 CFAF. A percentage of

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

133

134 **Table 2.** Socio-economic and Demographic Characteristics of the Mothers

Characteristics	Category	Number	%
Age (year)	< 30	400	74.1
	31-40	126	23.3
	> 40	14	2.6
Marital status	Married	408	75.4
	Single	113	20.9
	Divorce	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)	<50.000	168	31.1
	50.000-100.000	262	48.5
	100001-300000	86	15.9
	>300000	24	4.4

135 **3.2 Maternal Knowledge, Attitude and Beliefs on Breastfeeding.**

136 Table 3 gives information about knowledge, attitude and beliefs of the mothers concerning
 137 breastfeeding. Most of the mothers (80.7%) had the appropriate knowledge on breastfeeding in
 138 the domain of breast milk being the best food for the baby. Over half of the respondents (63.5%
 139 and 60% respectively) knew that breastfed babies are healthier than formula-fed infant and that
 140 the recommended period for Breast feeding is at least 2 years. Only 37% of them knew that
 141 exclusive breast feeding has health benefits for the mother. Most of the mothers (88.7% and
 142 83.7% respectively) had a positive attitude with respect to feeding the baby with colostrum and
 143 giving a baby breast milk as the first food after birth. About half of the respondents (50.2%) had
 144 a good attitude concerning feeding the baby with expressed breast milk. Only 35.6% of

145 respondents believed that breast milk alone is enough food for the baby for up to six months and
146 65.4% believed that infants below 6 months do not need extra water, as indicated in table 3.

147 **Table 3.** Maternal knowledge, Attitudes and Beliefs on Breastfeeding

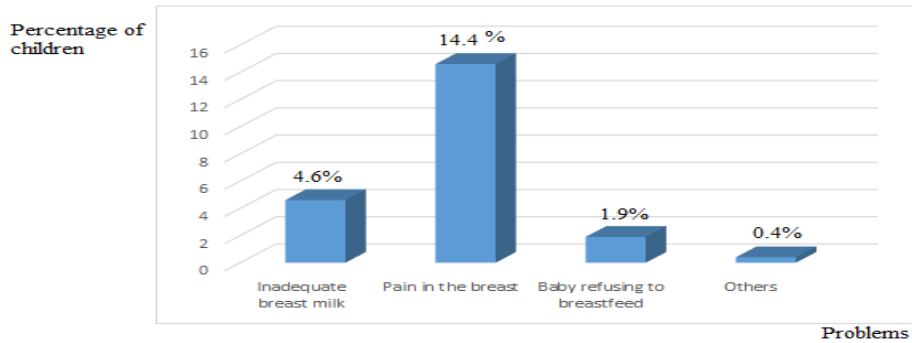
Variable	Statement	N (%)
Knowledge	Breast milk is the best food for babies.	436 (80.7)
	Exclusive breast feeding has health benefits for the mother	200 (37.0)
	Breastfed babies are healthier.	343 (63.5)
	Recommended period for BF is at least 2 years.	322 (59.6)
Attitudes	Colostrum given to the baby.	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)

148 BF = breastfeeding

149

150 **Problems faced during Breastfeeding**

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



156

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

158

159 **3.3 Factors associated with Breastfeeding Practices**

160 **3.4**

161 **3.3.1 Factors associated with Pre-Lacteal Feeding**

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

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175

176 **Table 4.** Factors associated with Pre-Lacteal Feeding

Factors	OR	P-value	95% C.I. for OR	
			Lower	Upper
Birth order(ref:1)				
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

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

178 **3.3.2 Factors associated with Breastfeeding initiation within one hour**

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

187 Also, mode of delivery significantly affects period of initiation of breastfeeding (p=0.000), the
 188 latter being less likely to be timely in mothers who had given birth by caesarian. Mothers who
 189 delivered their infants by the normal vaginal method were more likely to practice early initiation
 190 of **breastfeeding (BF)** compared to mothers who delivered by the caesarean method. Children
 191 delivered normally are 7.7 times more likely to receive breast milk within one hour than those
 192 born through caesarian section. This delayed breastfeeding initiation is most probably caused by
 193 the physical condition of the mother after delivery whereby some mothers claimed that they did
 194 not have a good health status to be able to breastfeed or the painful conditions associated with

195 caesarean section. Fatigue and limited mobility also reduce the impetus of cesarean section
 196 mothers to breastfeed. Many studies have reported the same results [14-16]. Contrarily,
 197 DiGirolamo *et al* [17] concluded that type of delivery (vaginal versus caesarean) had no
 198 significant influence on BF practices.

199

200 **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

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

203 **3.3.3 Factors Associated with Exclusive Breastfeeding**

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

215 Pain in the breast during breastfeeding also significantly influenced exclusive breast feeding
 216 (p=0.014). Mothers who had no pain during exclusive breastfeeding period are 1.9 times more

217 likely to breastfeed their children exclusively for six months. The consequence of these
 218 difficulties is a negative experience with breastfeeding which is followed by a reduction in
 219 mothers' confidence to breastfeed their infants, hence, causing early cessation of exclusive breast
 220 feeding [23]. Concordantly, other similar studies carried out had the same findings [18, 24, 25].

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

231 **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

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

233 3.3.4 Factors associated with Frequency and Duration of Breastfeeding

234 Tables 7 and 8 respectively indicate the factors linked to frequency and duration of
 235 breastfeeding. Table 7 shows that there is a significant association between baby's age and
 236 frequency of breast feeding. Children above 6 months are less likely to breastfeed more than 8
 237 times a day. Concerning duration (Table 8), there is a significant association existing between

238 infant weight at birth and the duration of breastfeeding. Children who were born weighing less
 239 than 2.5kg were 5 times more likely to be breastfed for 2 or more years than children who were
 240 born weighing 2.5kg or more. There is also a significant association between age of the baby and
 241 duration of BF. This means that as children grow older they are more likely to stop
 242 breastfeeding. Also, mother's knowledge on recommended duration of Breast feeding until 2
 243 years and beyond significantly affects duration of breastfeeding (p=0.012). Mothers who had the
 244 knowledge of the recommended period were 6 times more likely to breastfeed their children for
 245 up to two years and beyond. The other factors did not significantly affect the duration of Breast
 246 feeding. Also, mother's knowledge on recommended duration of Breast feeding positively
 247 affected the duration of Breastfeeding the child. This information is affirmed by results presented
 248 by Chambers *et al.* [28] and Pascale *et al.* [29] that showed positive association between
 249 mothers' knowledge and Breast feeding practice.

250

251

252 **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

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

254 **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

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

256 **4. CONCLUSION**

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

263

264 Authors have declared that no competing interests exist.

265

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UNDER PEER REVIEW

