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Evaluation of the Practice of Exclusive Breastfeeding Among Mothers of Children Aged 0-6 Months at the N'tabacoro Attbougou Community Health Area in 2024, Mali

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Abstract

Background: Exclusive breastfeeding promotes maternal-child health, reduces mortality, but remains hampered by cultural beliefs despite progress**.** This study examined sociodemographic, and healthcare-related factors associated with exclusive breastfeeding in N'Tabacoro Attbougou community health area.

Materials and Methods: This was a cross-sectional, descriptive and analytical study, conducted at the community health area of N'Tabacoro Attbougou over two months, and involved 420 mothers of children aged 0 to 6 months, meeting specific inclusion criteria. Data were collected using a structured questionnaire and then analyzed with SPSS version 20. Compliance with ethical principles, including informed consent and anonymity, was ensured. **Results:** The survey conducted at the N'Tabacoro Attbougou community health center (CSCom) involved 420 mothers of children aged 0 to 6 months. The majority of mothers (43.3%) were between 15 and 25 years old, and 62.6% of the children were female. The study showed that mothers aged 26 to 35 were five times more likely to practice exclusive breastfeeding than those aged 36 to 45. The availability of housewives and support, particularly from spouses and health workers, were determining factors. Mothers' professional activity appears to be one of the main obstacles to the

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practice of EBF. Where are the determinants and obstacles? You have mentioned about determinants in the objective.

Conclusion: The low rate of exclusive breastfeeding was linked to factors, mainly the mother's personal characteristics and the sociocultural context. Nothing in the results regarding modifiable factors.

Keywords: Exclusive breastfeeding practice, Associated factors, child 0-6 months, Community health area, Mali

Introduction

Exclusive breastfeeding (EBF) is defined by the World Health Organization (WHO) as "the practice of giving an infant only breast milk for the first six months of life, without adding any other liquid or food, except drops or syrups containing vitamins, minerals, or medicines" (1). This practice promotes the child's physical and emotional growth, strengthens the mother-child bond, supports the infant's immune system, and reduces costs related to the purchase of formula milk and medical care (2,3). Exclusive breastfeeding reduces infant mortality from common illnesses such as diarrhea or pneumonia, and speeds recovery from illness. It is estimated that optimal breastfeeding could save the lives of 820,000 children under five worldwide each year (4). It also contributes to the health and well-being of mothers, helping to space births, reducing the risks of ovarian and breast cancer, and increasing the economic resources of families and countries (5).

In 2012, the WHO set a global target to increase the rate of EBF to at least 50% by 2025 (6). Between 2012 and 2019, the prevalence of exclusive breastfeeding among infants aged 0 to 5 months increased from 37% to 44% globally, and from 35.5% to 43.6% in Africa (7). The lack of breastfeeding has serious health and economic consequences: according to a study published in 2022, it causes economic losses estimated at $1.5 billion per day worldwide (8).

In some African countries, EBF rates remain variable: in Senegal, 51.8% of mothers practice exclusive breastfeeding (3), while in Burkina Faso, 42% of newborns were breastfed within one hour of birth, and 36% received food even before the start of breastfeeding (9). In Mali, according to the Demographic and Health Survey (EDS-VI 2018), the EBF rate increased from 25% to 40% (10). Within the framework of the Health and Social Development Program (PRODESS), which aims for a target of 80% of women practicing EBF up to six months, in accordance with WHO recommendations (4).

However, despite this improvement, the practice of EBF remains influenced by several factors: the mother's sociodemographic characteristics, family support, the child's health status, access to health services, as well as cultural and social beliefs (11,12). In some traditions, particularly under the influence of mothers-in-law, decoctions of medicinal plants are administered to infants, calling into question the exclusivity of breastfeeding (13). Other beliefs consider that breastfeeding must be immediately discontinued in the event of a new pregnancy (13).

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Thus, despite the efforts made, several obstacles persist and hinder the widespread adoption of exclusive breastfeeding in Mali. It is in this context that we deemed it necessary to analyze the factors associated with the practice of exclusive breastfeeding by mothers of children aged 0 to 6 months in a community health zone in Mali, in order to better guide the intervention strategies of the stakeholders involved.

Materials and methods

Type and period of study:

A cross-sectional study was conducted from 20 November 2023 to 20 January 2024 in the Community Health Center (CSCom) of N'Tabacoro Attbougou health area, located in the Kalabancoro health district, Koulikoro region. This community health center, located 29 km east peripheral of the Bamako district, serves an estimated population of 4,955 inhabitants in 2023 spread across 886 social housing units. The N'Tabacoro Attbougou Community Health Center (CSCom) was created in 2018. The staff consists of a doctor acting as Technical Director of the center (DTC), four State Nurses, three Lab Technicians, three Midwives, twelve Obstetric Nurses, a manager, and a Guardian. This CSCom offers a range of community health obstetric services, such as family planning, prenatal care, delivery services, postnatal care, and counseling services.

Study population:

The study involved mothers of children aged 0 to 6 months living in N'Tabacoro Attbougou , having attended the CSCom for Post-Natal Consultations (CPON) or as part of the Expanded Vaccination Program (PEV).

Inclusion criteria: Mothers of children aged 0 to 6 months residing in the study areas for more than six months during the data collection period.
Exclusion criteria: Mothers who were seriously ill and/or unable to provide information, as well as children with chronic illnesses, were excluded from the study.

Sample size:

The estimated minimum sample size was calculated using Schwartz's formula:
$n = t^2xP\ (1-P)\ /i^2$.
t = 1.96 (for a 95% confidence interval).
P = 0.40 (estimated national prevalence of EBF in Mali).
i = 0.05 (precision).
$n= (1.96)\ ^2x0.40x0.60/\ (0.05)\ ^2$ or n= 369 (estimated minimum sample size), this estimated minimum sample size was increased by 10% nonresponse and a margin of error of about 5% from studies conducted with mothers who had an infant aged 0 to 6 months in Mali.

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Data collection:

Data were collected through individual face-to-face interviews with the targeted mothers. A mixed-methods questionnaire, including open-ended and closed-ended questions, was used. This questionnaire underwent pre-testing to ensure participants understood it and to make any necessary adjustments before data collection began.

Data analysis:

Data were entered, cleaned, and edited in Excel and analyzed using SPSS version 20 software.

Descriptive statistics were calculated:

For quantitative variables, means ± standard deviation or medians with extremes were used depending on the distribution. Univariate analysis was performed between the dependent variable (EBF) and the independent variables using the Chi-square test or Fisher's exact test.
A multivariate analysis was then carried out, with calculation of the Odds Ratio (OR) and their 95% confidence intervals. The significance threshold was set at $p < 0.05$.

Ethical considerations:

Free and informed consent was obtained from each participant. The principles of anonymity and confidentiality were strictly respected throughout the study.

Results:

Sociodemographic characteristics of the mothers of children aged 0 to 6 months:

The survey involved 420 mothers of children aged 0 to 6 months, at the N'Tabacoro Attbougou community health center. The average age of mothers was 30 years with a standard deviation of 10.5 years and extremes ranging from 15 to 45 years. The age group of 15 to 25 years represented 43.3%, with a median age of 30.5 years for mothers. The majority of mothers were married (91.0%) and 46.0% had a primary education level. Those without schooling represented 23.1% of the sample.

Regarding the parity of mothers, 46.9% were pauciparous, followed by multiparous at 28.6% and 7.1% were grand multiparous. The age group of children from 5 to 6 months represented 41.4% of cases. Girls were the majority (62.6%), giving a F/M sex ratio of 0.59. The vaccination coverage of children according to the national schedule was 93.6%.

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These data are summarized in (Table 1).

Table 1: Distribution of mothers and children according to sociodemographic characteristics of the 420 mothers of children aged 0 to 6 months

Characteristics N=420	**Number of employees N=420**	**Percentage (100%)**
Age		
[15-25]	182	43.3
[26-35]	156	37.2
[36-45]	82	19.5
Marital status		
Bride	**382**	**91.0**
Bachelor	37	8.8
Widow	1	0.2
Educational level		
Primary school	**193**	**46.0**
Secondary school student	88	21.0
Higher education	42	10.0
Not in school	97	23.1
Occupation		
Housewife	**241**	**57.4**
Shopkeeper	120	28.6
Official	42	10.0
Tailor	9	2.1
Student	8	1.9
Parity		
Primiparous	73	17.4
Pauciparous	**197**	**46.9**
Multiparous	120	28.6
Large multiparous woman	30	7.1
Child's age		
[1-2] months	113	26.9
[3-4] months	133	31.7
[5-6] months	174	41.4
Sex		
M	157	37.4
F	**263**	**62.6**
Vaccination Status		
Yes	**393**	**93.6**
No	27	6.4

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Regarding breastfeeding practices, 90.2% of partners were in favor of breastfeeding. Among the 420 mothers surveyed, 160 (38.2%) practiced exclusive breastfeeding (EBB), while 61.8% gave their children liquids other than breast milk.

The majority of mothers (73.8%) made the decision to breastfeed in the postpartum period. Breastfeeding within 30 minutes of delivery was reported in 71.7% of cases, and the frequency of feedings depended on the child's request at 59.0%. Water was the most frequently administered liquid before the age of 6 months (55.5%), followed by other foods and herbal decoctions (6.3%). Perceived insufficient breast milk was the main reason for introducing liquids or foods (72.3%), the media were the most used sources of information at 63.1%, followed by talks at the Community Health Center at 36.9%, and 68.6% of mothers reported having the support of their partners.

Furthermore, 25.0% of mothers reported having encountered difficulties while breastfeeding, the most frequent being insufficient breast milk (54.3%).

Univariate analysis:

A statistically significant relationship was observed between the practice of exclusive breastfeeding and several variables: maternal age, spousal support, educational level, occupation, breastfeeding frequency and cohabitation with a grandparent ($p < 0.05$).

Maternal age significantly influenced the practice of EBF ($p < 0.001$).
Educational level was also associated with EBF ($p = 0.015$).

A significant association existed between the mother's profession and the practice of EBF ($p = 0.027$).

Breastfeeding frequency also influenced EBF ($p = 0.021$).

Spouse support played an important role in this practice ($p< 0.001$).
Cohabitation with a grandparent also had a significant association with EBF ($p = 0.037$).
The data from the univariate analysis are summarized in (Table 2).

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Table 2: Univariate analysis of mothers' general characteristics according to the use of exclusive breastfeeding (n= 420)

Mothers' age (in years)	**Exclusive breastfeeding**		**p -value**
	Yes	**No**	
[15-25]	**72**	**110**	**< 0.001**
[26-35]	38	118	
[36-45]	48	34	
Total	158	262	
Marital status			
Bride	142	240	**0.56**
Bachelor	16	21	
Widow	0	1	
Total	158	262	
Educational level			
Primary school	64	129	**0.015**
Secondary school student	27	61	
Higher education	22	20	
Not in school	45	52	
Total	158	262	
Mothers' profession			
Housewife	101	140	**0.027**
Shopkeeper	44	76	
Official	12	30	
Tailor	1	8	
Student	0	8	
Total	158	262	
Frequency of feedings			
More than 8 times	76	96	**0.021**
On demand	82	166	
Total	158	262	
Support			
Spouse	109	179	**<0.001**
Health personnel	46	50	
No person	3	33	
Total	158	262	

Multivariate analysis:

Multivariate analysis identified factors independently associated with the practice of exclusive breastfeeding. Mothers aged 26 to 35 were 5.27 times more likely to practice EBF than those aged 36 to 45. Those aged 15-25 were 4.19 times more likely to do so than the reference group (36-45 years). Multiparous women were 0.96 times more likely to breastfeed exclusively than

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primiparous women. Educated mothers were less likely to practice EBF than non-educated mothers (OR = 0.50; p = 0.003). Civil servants and seamstresses were respectively 5.4 (p = 0.001) and 9.79 times (p = 0.004) more likely to practice EBF than housewives.
The data from the multivariate analysis are summarized in (Table 3).

Table 3: Multivariate analysis of factors associated with exclusive breastfeeding among mothers of children aged 0-6 months at the N'Tabacoro community health center in 2024, Mali (n= 420)

Factors		CI for 95% OR		p -value
	GOLD	Lower	Superior	
Maternal age				
36-45	Ref.			1
26-35	5,273	1,824	15,243	0.002
15-25	4,191	1,434	12,246	0.009
Parity				
Primiparous	Ref			
Pauciparous	1,030	0.225	1,030	0.060
Multiparous	0.965	0.398	0.164	0.041
Grand multiparous	6,531	2,254	0.778	0.134
Schooling				
No	Ref.			1
Yes	0.501	0.260	0.967	0.039
Occupation				
Housewife	Ref.			1
Shopkeeper	1,005	0.466	2,168	0.989
Official	5,401	2,295	12,711	0.000
Tailor	9,798	2,064	46,504	0.004
Student	4,007	0.611	26,287	0.148
Cohabitation with mother or stepmother				
No	Ref.			1
Yes	3,317	1,697	6,485	0.000
Delivery route				
Low way	Ref.			1
Caesarean section	4,119	1,775	9,557	0.001

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Breastfeeding				
On demand	Ref.			1
more times	0.804	0.417	1,550	0.515

Comments and Discussion:

Strengths and Limitations

This study is the first carried out in this community health area on the practice of exclusive breastfeeding. It provided an overview of factors associated with exclusive breastfeeding practices in similar peri-urban areas in Mali. However, the study also has limitations, including the use of self-reported information that introduces a risk of recall bias and the cross-sectional nature of the study design that limits the ability to establish causal relationships between the identified factors and EBF practices.

Socio-demographic characteristics and median age:

N'Tabacoro Community Health Center Attbougou, allowed to study the practice and factors influencing exclusive breastfeeding. The study focused on mothers of children aged 0 to 6 months living in N'Tabacoro Attbougou came to the Center for Post-Natal Consultations (CPON) or as part of the Expanded Vaccination Program (PEV). This choice of the study population made it possible to determine the prevalence of exclusive breastfeeding at the age of 0-6 months. The majority of mothers surveyed were aged between 15-25 years, i.e. 43.3% with extremes ranging from 15 to 40 years, with an average age of 30 years and married mothers were the majority at 91%. Our results are different from those of Sacko K et al who found mothers aged between 21-30 years at 60% with extremes ranging from 15 years to 41 years, an average age of 25 years, but similar compared to married mothers at 91%. This difference is due to the influence of the study location; one was carried out in a hospital setting and the other in a community setting.

The mothers' level of education was predominantly primary, i.e. 46%, with those who had no schooling representing 23.1% of the sample. However, Sacko K et al found 26.09% for primary level and 29.57% for those who had no schooling, respectively. This is due to the realities of the urban and peri-urban areas.

In our study, 57.4% of mothers were housewives. This rate is similar to that observed by Ouattara A, (3) in 2023 in Mali (55.6%) and Sacko K Al in 2017, who found 60% of housewives (13). This high prevalence of housewives could explain their greater availability to practice exclusive breastfeeding and the role attributed to women in Malian society.

Pauciparous women represented 46.9% of our sample, a rate similar to that of Ouattara A. in 2023 who reported 45%. However, MecheriTouati D. in Algeria (2014) found a predominance of multiparous women (60%). In Tunisia, Bouanene I. (2010) reported 24.6% of primiparous women (15) and 58.3% of pauciparouswomen. The higher proportion of pauciparous women in our study could be related to the effectiveness of family planning policy in Mali and Tunisia.

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Regarding the initiation of breastfeeding, 71.7% of mothers breastfed within 30 minutes of delivery. This rate is much higher than those reported by Ouattara A. (2023) in Mali (14.1%), Ben Slama F. (2010) in Morocco (20%), Amin T. in Saudi Arabia (11.2%) and Al Ghwass M. in Egypt (10.4%) (16,17,18). This precocity could be attributed to awareness raising through the media and support from health workers.

Thus, 38.2% of mothers practiced exclusive breastfeeding, this result is similar to that of the DHS VI of Mali in 2018 which found 40%, but these results are significantly higher than Sacko K in Mali in 2019 (EBF at 10.43%). This difference is due to the strengthening of promotional health care at the community level than at the hospital level in Mali.

Regarding liquids administered to infants, water was the most commonly used (55.5%), followed by herbal tea (6.3%). In comparison, Sacko K. (2017) found that 89% of infants received inappropriate feedings based on water (12%), artificial milk (46%), and medicinal herbs (32%) (13).

In terms of support, 68.6% of mothers reported receiving support from their spouse, and 22.9% from health personnel. These proportions are comparable to those reported by Ouattara A. (2023), with 68% and 22% respectively. The media represented the main source of information for 63.1% of participants, this result is also close to that found by Ouattara A. (62.3%).

Finally, 25% of mothers reported difficulties related to exclusive breastfeeding, including insufficient milk (54.3%) and breast pain (39%).

Relationship between exclusive breastfeeding and socio-demographic characteristics

We observed a statistically significant association between exclusive breastfeeding and most of the socio-demographic characteristics studied, with the exception of marital status. These results are consistent with those of Boubacar Gueye et al. in Senegal (1) and Takassi OE et al. in Togo, who also found significant associations. In contrast, Linda Bell et al. in Canada did not observe a significant association between breastfeeding and socio-demographic characteristics (19). This difference may be explained by the effects of targeted promotion campaigns and support from health workers in Mali.

Factors influencing exclusive breastfeeding

A statistically significant association ($p < 0.05$) was found between exclusive breastfeeding and mothers' age, occupation, breastfeeding frequency, and support received during breastfeeding. These results are similar to those of Ouattara A., who observed that mothers aged under 25 years were more likely to practice exclusive breastfeeding (2).

The availability of housewives and support, particularly from spouses and health workers, were determining factors. In Tanzania, Melina Mgongo also reported that mothers who received postnatal counseling were more likely to practice exclusive breastfeeding. This highlights the

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importance of community interventions and postnatal follow-up in adopting good breastfeeding practices.

Conclusion:

The rate of exclusive breastfeeding (EBF) during the first six months of a child's life in N'Tabacoro Attbougou community health area is relatively low, estimated at 38.2%. This situation is explained in particular by certain maternal practices, such as the early introduction of other liquids (water, herbal teas, etc.), often motivated by professional reasons, perceived hypogalactia or other beliefs. However, it is encouraging to note that 71.7% of mothers-initiated breastfeeding immediately after giving birth and 59% breastfeed their child on demand, in accordance with the recommendations of the World Health Organization (WHO).

Mothers' professional activity appears to be one of the main obstacles to the practice of EBF. Taking them into account in public health interventions could significantly contribute to improving exclusive breastfeeding practices in this community health area and, by extension, in many other similar communities in Mali.

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Conflicts of interest:

The authors declare that they have no conflict of interest.

Author contributions:

All authors, in addition to their specific contributions to this work, have read and approved the final version of this document.

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