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Study of the Determinants of Exclusive Breastfeeding: Cultural Specificities and Field Reality in Laayoune

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Abstract **Original Research Article**

Background: Exclusive breastfeeding (EBF) remains one of the most effective interventions for reducing infant morbidity and mortality. However, EBF rates remain insufficient in several regions of Morocco, particularly in the southern provinces where the determinants of this practice are still poorly documented. The Laâyoune region presents a unique socio-cultural context, shaped by Saharan traditions, which could influence maternal breastfeeding practices. ***Objective:*** The objective of this study is to assess the prevalence of exclusive breastfeeding among mothers consulting in health centers in Laâyoune and to identify the main constraints reported by mothers that hinder its practice. ***Methods:*** A cross-sectional study was conducted among mothers of infants aged 6 to 18 months. Information was collected via a standardized questionnaire and then analyzed using multivariate logistic regression to identify factors independently associated with anorexia nervosa. ***Results:*** The prevalence of early breastfeeding is 42%, a rate higher than the national average reported in 2018 (35%), but still below the global target (70% by 2030). Factors positively associated with early breastfeeding include skin-to-skin contact, early initiation of breastfeeding, prenatal counseling on breastfeeding, and knowledge of its recommended duration. Cesarean section and early return to labor appear to be unfavorable factors. ***Conclusion:*** These results underscore the need to strengthen the continuum of mother-infant care and breastfeeding support strategies tailored to the cultural realities of Morocco's southern provinces. The systematic integration of breastfeeding-friendly practices in healthcare facilities, along with the adoption of social policies that facilitate work-maternity balance, are key levers for improving the health of future generations.

Keywords: Exclusive breastfeeding; Determinants; Health promotion; Laayoune; Morocco.

1. INTRODUCTION

Breastfeeding, and in particular exclusive breastfeeding (EBF), is the most suitable form of nutrition for infants during the first six months of life. Breast milk provides all the essential nutrients for healthy growth and offers effective protection against respiratory infections, diarrhea, allergies, and certain chronic diseases such as obesity and diabetes. It also offers benefits for maternal health, including a reduced risk of cancer and postpartum hemorrhage. [1]

Each drop of breast milk constitutes a unique biochemical micro-ecosystem, specifically adapted to the needs of the infant. Its dynamic composition — rich in nutrients, immune factors, living cells, hormones and microbiota — reflects a close biological dialogue between mother and child, thus playing a crucial role in their health and optimal development. [2]

To promote this practice, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) launched the Baby-Friendly Hospital Initiative (BFHI) in 1991. This initiative aimed to ensure the protection, promotion, and support of breastfeeding within maternal and newborn care settings [3]. Since 2018, the BFHI has been revised to strengthen its integration into a continuum of maternal-neonatal-outpatient care, with an emphasis on the strict application of the International Code of Marketing of Breast-milk Substitutes, ongoing training for healthcare staff, and systematic monitoring of facilities to ensure the sustainability of breastfeeding-friendly practices [4]. These measures aim to optimize the early initiation of breastfeeding and to continuously support optimal breastfeeding practices.

Despite these efforts, breastfeeding rates at birth remain insufficient globally. According to the Global Breastfeeding Scorecard 2023, the global prevalence of breastfeeding at birth among infants under six months is 48%. However, significant disparities persist between countries: some Nordic countries have breastfeeding rates exceeding 90% at birth, while other countries in Africa, Latin America, and the Middle East remain below 30% [5]. For example, in Pakistan, the breastfeeding rate is 48.4%, in Nigeria 29%, in Mozambique 56%, and in Kyrgyzstan 44% [6–9]. These variations illustrate the impact of socioeconomic, cultural, and health factors on breastfeeding practices worldwide.

In Morocco, the situation also reflects this worrying trend. A recent meta-analysis covering the period 1992–2025 estimates the six-month AME rate at approximately 42% [10]. Although the 2018 national survey reported 35% AME, this average masks significant regional and socioeconomic disparities [11]. Despite gradual improvement, Morocco remains far from the recommended rate, highlighting the need for targeted actions tailored to local specificities.

In the Saharan regions of Morocco, particularly in Laayoune, traditional practices and cultural beliefs strongly influence infant feeding. The early introduction of herbal teas, crushed dates, dhen (animal fat), or honey constitutes a major obstacle to exclusive breastfeeding. Other factors, such as the mother's level of education, early return to work, lack of family or community support, as well as certain perceptions related to female beauty and the postpartum figure, can also influence this practice.

To our knowledge, no study has specifically assessed the determinants of AME in this Saharan region of Morocco characterized by both a strong influence of Saharan and nomadic traditions, a heterogeneous socio-economic context and sometimes precarious living conditions.

The objective of this study is therefore to determine the prevalence of exclusive breastfeeding in Laâyoune and to identify the socio-cultural, economic, and health factors that influence this practice. By incorporating local specificities, this survey aims to provide original data that can guide public health interventions to promote exclusive breastfeeding and improve infant nutrition and health in the southern region of Morocco.

2. MATERIALS AND METHODS

2.1. Study area:

The study was conducted in the city of Laâyoune, in southern Morocco. The city has approximately 262,791 inhabitants and includes both urban and peri-urban areas. Participants were recruited from two main health centers: the 25 Mars Health Center and the El Qods Health Center. These centers are representative of the local population and provide pediatric care and infant vaccinations.

2.2. Type of study:

This is a descriptive and analytical cross-sectional study, conducted over a two-month period, between July and September 2025. The study was designed to assess the prevalence of exclusive breastfeeding (EBF) and identify its determinants in the region.

2.3. Population and inclusion criteria:

The target population consisted of biological mothers of infants aged 6 to 18 months, residing in Laâyoune, who came for their child's routine vaccination. The inclusion criteria were as follows:

- To be the biological mother of the child;
- There are no medical contraindications to breastfeeding;
- Have a child aged 6 months to 18 months residing in the study area.

2.4. Sample size and selection:

A total of 100 mothers were recruited using systematic sampling during their visits to health centers. Participants were informed of the study objectives and gave their informed consent before participating.

2.5. Data Collection

The data were collected using a structured questionnaire, developed from existing literature and adapted to the local context. The questionnaire explored four areas

1. The socio-demographic characteristics of mothers and infants (age, education level, employment, marital status, parity).
2. Breastfeeding practices, including exclusive breastfeeding and total duration of breastfeeding.
3. The level of knowledge of the recommendations and benefits of exclusive breastfeeding.
4. The difficulties encountered, with a particular focus on traditional local practices, such as the administration of herbal teas,tmer, dhen and honey.

Each interview was conducted face-to-face by trained interviewers, ensuring comprehension of the questions and reliability of the answers.

2.6. Statistical analysis:

The data were analyzed using SPSS software. Quantitative variables were expressed as mean ± standard deviation, and qualitative variables as percentages. Associations between exclusive breastfeeding and explanatory variables were tested using the chi-square test, and significant factors ($p < 0.05$) were included in a multivariate logistic regression

analysis to identify independent determinants of exclusive breastfeeding.

2.7. Ethical considerations:

The study was conducted in accordance with the principles of the Declaration of Helsinki. The protocol was approved by the local ethics committee. All participants provided informed consent, and data confidentiality and anonymity were strictly maintained.

3-RESULTS

3.1. Sociodemographic characteristics:

The study included 100 mothers with a mean age of 28.4 ± 5.9 years with extreme ages ranging from 18 to 42 years. More than half were housewives (58%), 27% were employed and 15% were students.

Regarding education level, 20% were illiterate, 38% had a secondary level, 30% a primary level, and 12% a higher level.

The majority of mothers were married (70%), while 5% were single. The education level of spouses ranged from 15% illiterate to 19% with a higher education. Family income was low in 73%, medium in 16% and high in 11%.

3.2. Obstetric and neonatal characteristics:

- The infants comprised 53% girls and 47% boys.
- The majority of births were at term (80%) compared to 20% premature.

The mode of delivery was predominantly vaginal (75%), with cesarean section accounting for 25%. Nearly half of the infants (46%) were firstborns. Parity showed a predominance of multiparous mothers (60%) compared to primiparous mothers (40%).

- Prenatal care was provided to 75% of the women.
- Regarding postnatal follow-up, 60% had benefited from it but only 35% had received specific advice on breastfeeding.

These results are summarized in Table 1 below.

Table 1: Obstetric and neonatal sociodemographic characteristics:

Features	N (%) or mean ± SD
Maternal age (years)	28.4 ± 5.9 (18–42)
Professional status	Housewife: 58 (58%) Professional Activity: 27 (27%) Student: 15 (15%)
Kindergarten education level	Illiterate: 20 (20%) Primary: 30 (30%) Secondary: 38 (38%) Superior: 12 (12%)
Father's level of education	Illiterate: 15 (15%) Primary: 26 (26%) Secondary: 40 (40%) Superior: 19 (19%)
Marital status	Bride: 70 (70%) Single: 5 (5%)
Family income	Low: 73 (73%) Average: 16 (16%) High: 11 (11%)
Method of delivery	Low track: 75 (75%) Cesarean section: 25 (25%)
Parity	First-time mother: 40 (40%) Multiparous: 60 (60%)
Sex born	Girls: 53 (53%) Boys: 47 (47%)
Birth	Eventually: 80 (80%) Premature babies: 20 (20%)

3.3. Practice and prevalence of exclusive breastfeeding:

The prevalence of breastfeeding at six months was 42%, 20% received mixed feeding and 38% used formula. The mean duration of breastfeeding was 4.2 ± 1.5 months.

Among mothers not practicing AME:

- 42% thought that breast milk alone was insufficient after 3 months.
- 25% introduced Herbal teas or honey from the first days, reflecting local cultural practices.

- Early breastfeeding (≤1h) was achieved in 3% of infants, between 1–6 hours in 88%, and after 6 hours in 9%.
- Immediate skin-to-skin contact was reported in only 12% of mothers.
- Frequency of feedings: 67% breastfed on demand and 33% followed a fixed schedule
- Food diversification with maintenance of AME was carried out between 4 and 6 months in 72% of infants.

These results are summarized in Table 2 below.

Table 2: Breastfeeding practices (n = 100)

Setting	N (%) or mean ± SD
Exclusive breastfeeding (EBT) at 6 months	42 (42%)
Mixed breastfeeding	20 (20%)
Artificial milk	38 (38%)
Average duration of AME (months)	4.2 ± 1.5
Food diversification	1–3 months: 19% 4–6 months: 72% >6 months: 5% <1 month: 4%
Colostrum received	YES 51 (51%) NO 49 (49%)
Placement within	(<1 h) 3 (3%) 1–6 a.m. 88 (88%) >6 h 9 (9%)
Immediate skin-to-skin contact	YES: 12 (12%) NO: 88 (88%)
Frequency of breastfeeding	On demand: 67 (67%) Fixed hours: 33 (33%)

3.4. Maternal knowledge and reported difficulties:
Mothers were generally aware of the benefits of breastfeeding:

- 65% considered breast milk to be the optimal nutrition.
- 54% mentioned protection against diseases,
- 64% acknowledged the effect on growth,
- 22.4% mentioned the development of the mother-child bond.

- A majority recognized the benefits for maternal health: 70%
- Furthermore, 55% knew that colostrum is beneficial and should be given to the infant.
- Among the mothers, 60% reported having experienced difficulties during exclusive breastfeeding.

The most frequent reasons were:

- 38.4%: perceived milk insufficiency
- 30.7%: breast pain (cracked nipples, engorgement…)
- 23%: return to work
- 16.7%: baby refusal to breastfeed
- 16.7%: lack of time
- 16%: cultural beliefs
- 5.5%other constraints

Many mothers stop breastfeeding to preserve their figure, in a cultural context where obesity remains a criterion of female beauty.

3.5. Factors associated with exclusive breastfeeding:

Bivariate analysis identified several significant determinants of exclusive breastfeeding (EBB) in our population. In particular, higher maternal education levels, postnatal care, breastfeeding counseling, skin-to-skin contact, and early initiation of breastfeeding were found to be factors promoting EBB. Conversely, cesarean section, early return of labor, perceived insufficient milk supply, and certain cultural beliefs were associated with a reduced likelihood of EBB.

To control for potential confounding factors, a multivariate analysis using logistic regression was then performed. This confirmed the positive effect of higher maternal education level (ORa = 2.8; 95% CI: 1.2–6.6), postnatal follow-up (ORa = 3.5; 95% CI: 1.4–8.9) and breastfeeding advice (ORa = 5.2; 95% CI: 2.0–13.6), thus highlighting the importance of educational and health support to strengthen the practice of mother-to-child breastfeeding.

In addition, immediate skin-to-skin contact after birth (ORa = 2.9; 95% CI: 1.1–7.6) and early initiation of breastfeeding within the first hour of life (ORa = 4.1; 95% CI: 1.4–11.8) were also found to be key determinants, confirming the crucial role of obstetric and neonatal practices in breastfeeding success.

Conversely, cesarean section (ORa = 0.5; 95% CI: 0.2–0.9), unfavorable cultural beliefs about breastfeeding (ORa = 0.4; 95% CI: 0.2–0.9), early return to work (ORa = 0.3; 95% CI: 0.1–0.7) and perception of insufficient milk supply (ORa = 0.3; 95% CI: 0.1–0.7) significantly decrease the probability of maintaining breast milk at 6 months.

These results are summarized in tables 3 and 4 below.

Table 3: Association between maternal-neonatal factors and AME at 6 months

Variables	Categories	SOUL %	p-value	Interpretation
Maternal age	< 25 years old vs ≥ 25 years old	48% vs 38%	0.041*	Younger people practice AME more often
Kindergarten education level	Higher/Secondary Education vs. Primary/Illiterate Education	55% vs 35%	0.003**	Education improves the SME
Family income	Medium/High vs Low	51% vs 37%	0.028*	Favorable socio-economic status
Professional activity	Housewife vs. Professional/Student	50% vs 33%	0.017*	Work reduces the AME
Postnatal follow-up	Yes vs. No	56% vs 22%	<0.001***	Strong positive influence
Advice on the AME	Yes vs. No	65% vs 21%	<0.001***	Major determining factor
Method of delivery	Vaginal birth vs. Cesarean section	49% vs 32%	0.035*	Cesarean section is an unfavorable factor
Parity	Multiparous vs. Primiparous	45% vs 38%	0.214	Not significant
Skin-to-skin contact	Yes vs. No	68% vs 37%	<0.001***	
Cultural beliefs	Present vs. Absent	29% vs 55%	0.006**	Negative impact
Early initiation	≤ 1h vs > 1h	71% vs 35%	<0.001***	Strong positive association
Breast pain	Yes vs. No	34% vs 50%	0.018*	Pain reduces the continuation of breastfeeding
Perception of insufficient milk supply	Yes vs. No	22% vs 61%	<0.001***	Main barrier to the AME

- * = significant ($p < 0.05$)
- ** = highly significant ($p < 0.01$)
- *** = very highly significant ($p < 0.001$)

Table 4: Multivariate analysis using logistic regression identified factors significantly associated with AME (adjusted OR, 95% CI, p < 0.05):

Variable	OR adjusted	IC95%	p-value	Interpretation
Maternal education level (secondary/higher vs primary/illiterate)	2.8	1.2–6.6	0.015	In favor of AME
Postnatal follow-up (Yes vs No)	3.5	1.4–8.9	0.007	In favor of AME
Advice on the AME (Yes vs No)	5.2	2.0–13.6	<0.001	Major determining factor
Immediate skin-to-skin contact (Yes vs No)	2.9	1.1–7.6	0.032	In favor of AME
Early initiation of breastfeeding ≤1 hour (Yes vs No)	4.1	1.4–11.8	0.009	In favor of AME
Cesarean section (Yes vs No)	0.5	0.2–0.9	0.046	Opposed to AME
Cultural beliefs (Yes vs No)	0.4	0.2–0.9	0.021	Opposed to AME
Early return to work (Yes vs No)	0.3	0.1–0.7	0.005	Opposed to AME
Perceived insufficient milk supply (Yes vs No)	0.3	0.1–0.7	0.005	Opposed to AME

4. DISCUSSION

In our study conducted in Laâyoune, the prevalence of exclusive breastfeeding (EBF) at six months was 43%, which is encouraging but still below the global target set by the WHO at 70% by 2030 [12]. This rate is higher than the national average reported in 2018 (35%) [11], but similar to recent estimates (≈42%) from a Moroccan meta-analysis [10]. However, it remains below the global average (48% according to WHO/UNICEF, 2023), confirming the need to strengthen local interventions to promote breastfeeding.

At the international level, our result is higher than those reported in Tunisia (18%, 2023) [13] and Senegal (42%), but lower than the rates observed in some Asian countries such as India or Bangladesh [14,15], where the AME exceeds 55–60%, notably thanks to more favorable policies regarding maternity leave and

breastfeeding support. These comparisons underscore the importance of structured measures to improve practice in Morocco.

4.1 Favorable determinants and mechanisms:

Our analyses identified robust protective factors: high maternal education level, postnatal follow-up, antenatal/postnatal breastfeeding counseling, immediate skin-to-skin contact, and early initiation of breastfeeding ≤ 1 h. These elements are consistent with the literature: early initiation of breastfeeding and skin-to-skin contact promote the activation of hormonal responses (oxytocin, prolactin), facilitate effective sucking, and strengthen the mother-child bond—physiological mechanisms that explain their effect on the establishment of effective lactation and continued breastfeeding. Systematic reviews and meta-analyses document the positive effect of skin-to-skin contact and early initiation on the initiation and duration of breastfeeding. [15]

4.2 Major obstacles: PIMS, resumption of labor and cesarean section:

Perceived insufficient milk supply (PIMS) is one of the main reasons for discontinuation of breast-feeding therapy (BFBT) in our population (≈38%) — a phenomenon widely reported in the world literature. Systematic reviews show that PIMS affects between 30 and 50% of mothers and is often linked to modifiable factors: lack of information, stress, inappropriate feeding practices, and lack of professional support. Targeted counseling and breastfeeding observation interventions significantly reduce PIMS and promote continued BFBT. [16]

Early return to work is an internationally recognized obstacle to the duration of breastfeeding. Recent studies and analyses show a positive relationship between the length of maternity leave/work-friendly policies (breastfeeding rooms, flexible hours) and the duration of breastfeeding; in the absence of such measures, working mothers interrupt or complete breastfeeding earlier. Our results (adverse odds ratio = 0.3 for early return to work) are consistent with these data and call for social policy measures. [18-19-20]

The mode of delivery (cesarean section) reduces the initiation and maintenance of breastfeeding, as illustrated by recent meta-analyses. The reasons include postoperative pain, mother-infant separation, and delayed breastfeeding initiation. Surgical protocols that encourage breastfeeding initiation and early breastfeeding after cesarean section have shown gains in initiation and breastfeeding. [21]

4.3 Local specificities and programmatic implications:

Cultural practices observed in Laâyoune, such as the administration of herbal teas, tmer (a type of herbal remedy), honey, or DHEN (a type of herbal tea), as well as social pressure regarding women's body shapes, are important contextual factors. These factors necessitate culturally appropriate interventions, with health messages co-developed with community stakeholders, such as grandmothers, traditional midwives, and local authorities. The involvement of trained community liaisons is also essential to correct misconceptions while respecting beneficial cultural practices.

In terms of health services, our data show that only 35% of mothers received specific breastfeeding counseling: increasing this proportion through ongoing staff training (maternity wards, maternal and child health centers, nurses), the systematic integration of counseling during prenatal and postnatal care, and the implementation/strengthening of the local Baby-Friendly Hospital Initiative (BFHI/IHAB) are priority measures. Recent reviews confirm the effectiveness of the BFHI in improving breastfeeding initiation and exclusivity. [21]

5. CONCLUSION

Our study in Laâyoune highlights a prevalence of exclusive breastfeeding (EBF) of 42% at six months, slightly higher than the national average, but still well below the global target set by the WHO of 70% by 2030. The results confirm that maternal factors (level of education, knowledge of the benefits of EBF), neonatal factors (early initiation of breastfeeding, skin-to-skin contact) and socio-professional factors (early return to work) significantly influence the practice of exclusive breastfeeding.

These observations are consistent with international data and underscore the crucial role of hospital and postnatal interventions, as well as pro-maternity policies, in supporting mothers. They also highlight the importance of considering local cultural beliefs and professional constraints when designing effective strategies to promote motherhood.

Therefore, to improve exclusive breastfeeding rates in the region, it is necessary to strengthen the implementation of the ten steps of the Baby-Friendly Hospital Initiative (BFHI), promote appropriate maternity leave policies, ensure structured postnatal follow-up, and raise awareness among families and the community about the benefits of exclusive breastfeeding. The results of our study provide original local data that can guide health authorities in developing targeted and tailored programs, with the ultimate goal of improving the health and development of infants in southern Morocco.

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