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Evaluation of the Dietary Practices of Breastfeeding Mothers: Case of General Hospitals in Bonoua and Dabou

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Abstract: The dietary practices of breastfeeding mothers are of crucial importance as they impact the health and development of their infants. Unfortunately, these dietary practices often do not align with recommendations. A prospective descriptive study was conducted to assess the dietary practices of 120 breastfeeding mothers. The study spanned seven months and took place in general hospitals in Bonoua and Dabou. Socio-demographic characteristics, dietary habits of breastfeeding mothers, and food consumption frequencies over a 7-day period were determined using an adapted questionnaire. The results revealed that the majority of mothers were aged between 25 and 34 years (50.8%), had a secondary education level (40%), were in a relationship, and worked as artisans, traders, or business owners. Regarding dietary practices, 68.4% of mothers consumed at least three meals per day, including breakfast, lunch, and dinner, with an estimated water intake between 1 and 1.5 L/day (60.9%). The dietary profile of breastfeeding women from Dabou and Bonoua consisted, in descending order, of fresh vegetables (99.2%), tubers and cereals (99.2%), meats, fish, and eggs (99.2%), oil (86.7%), sugar and sweet products (79.1%), and dairy products (58.1%). However, fruits (43.8%) and dried vegetables (3%) were less frequently consumed. 20% of women avoided certain foods during breastfeeding, and 23.3% consumed alcohol. In conclusion, it would be essential to conduct awareness campaigns to improve the dietary practices of breastfeeding mothers.

Keywords: Dietary Practices, Breastfeeding Mother, Infant, Breastfeeding

1. Introduction

Breast milk serves as the sole source of nutrition for a breastfed child, and its nutritional composition is partly linked to the mother's diet. The question arises about an ideal diet suitable for breastfeeding women and whether or not supplementation is necessary [1]. Thus, based on the conceptual framework of malnutrition from the United Nations Children's Fund (UNICEF), inadequate food intake is an immediate cause of maternal and child undernutrition [2]. Nutritional needs are higher in breastfeeding women compared to non-breastfeeding women [3]. However, breastfeeding mothers in Africa are considered a nutritionally vulnerable group [4], and Ivory Coast is no exception. Indeed, the dietary practices of breastfeeding mothers in Ivory Coast are deeply rooted in traditions and cultural beliefs that shape food decisions, which may not always be optimal [5]. This dietary mismatch could lead to nutritional deficiencies contributing to increased malnutrition. Nationally, over half (51.2%) of breastfeeding women are malnourished [6]. Furthermore, a mother with nutritional deficiencies will potentially struggle more to provide essential nutrients to her child [1-7], affecting the child's health and growth. The quality and quantity of breast milk, as well as the infant's

health, depend on the mothers' diet and knowledge. However, to the best of our knowledge, no study has documented the maternal dietary practices in inland cities (outside Abidjan) such as Dabou and Bonoua. The objective of this study was therefore to assess the dietary practices of breastfeeding mothers in the study area.

2. Materials and Methods

2.1. Type and Study Area

This was a cross-sectional descriptive and analytical study conducted in two inland cities outside of Abidjan: Bonoua and Dabou. The sites involved were the general hospitals of Bonoua and Dabou.

2.2. Study Period and Sample Size

The study spanned 7 months from mid-November 2021 to mid-June 2022. It involved 120 breastfeeding mothers.

2.3. Sampling and Subject Selection

Sampling was based on the database of a comprehensive study registered with the National Ethics Committee No. 107-22/MSHPCMU/CNESVS-kp, with a sample size of 300 mother/infant pairs, 60 per site. The subjects included all breastfeeding women who attended the general hospitals of Bonoua and Dabou during the study period and agreed to participate.

2.4. Nutritional Survey

This study required a cross-sectional survey. Data collection involved face-to-face administered questionnaires. The collected information included sociodemographic factors and maternal dietary practices.

2.5. Selection of Variables

The sociodemographic variables selected for this survey included educational level, mother's age, profession, and marital status. Data related to maternal dietary practices included the number of meals per day, water consumption, frequency of consumption of different food groups over 7 days, taboo foods, alcohol consumption, and tobacco use.

2.6. Statistical Analysis

IBM SPSS Statistics version 20.0 software was used for processing the survey data, which is based on calculating the mean expressed as a percentage.

2.7. Ethical Aspects

Ethical approval was obtained from the National Committee on Ethics of Life and Health Sciences (CNESVS). Permission to conduct the study was secured from all relevant authorities in the study area. Each participant in the study was informed about the research and given the opportunity to ask questions. Subsequently, informed consent was obtained from each participant before their involvement in the study, and the data remained confidential.

3. Results

3.1. Sociodemographic Characteristics

The table indicates that the majority of surveyed mothers were aged between 25 and 34 years (50.8%), had a secondary education level (40%), were in a relationship, and worked as artisans, traders, or business owners.

Table 1. *Sociodemographic Characteristics of the Study Population.*

Sociodemographic Characteristics		Counts	Percentage
Age	17-24	30	25
	25-34	61	50.8
	35-45	29	24.2
Education Level	Primary	19	15.8
	Secondary	48	40
	Higher Education	24	20
	Not Schooled	29	24.2
Marital Status	Married	64	53.3
	Single	25	20,8
	Cohabiting	31	25.8
Occupation	Artisan, Trader	56	46.6
	Civil Servant	6	5
	Ouvrière	3	2.47
	Worker	3	2.5
	Student	18	15
	Homemaker	33	27.5

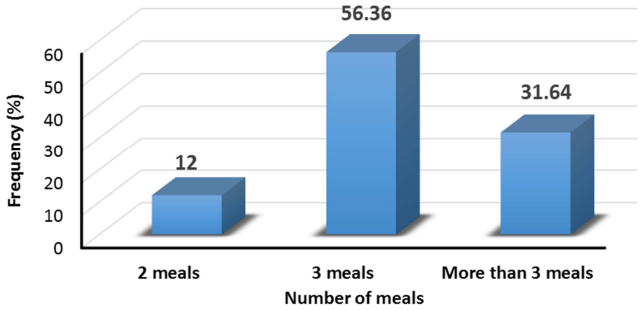

Figure 1. *Distribution of mothers based on the number of meals taken per day.*

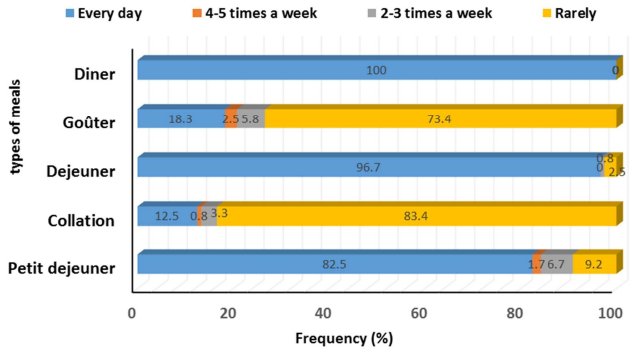

Figure 2. *Distribution of mothers based on the types of meals taken per day.*

3.2. Dietary Practices of Breastfeeding Mothers

3.2.1. Type and Frequency of Meals Consumed by Mothers

Figures 1 and 2 show that a little over half of the mothers, 56.36%, took at least 3 meals per day. The three meals taken were breakfast (82.5%), lunch (96.7%), and dinner (100%). Only 31.64% and 12% took more than 3 meals and 2 meals per day, respectively. The least consumed meals were snacks (83.4%) and afternoon tea (73.4%). It is also noteworthy that 18.3% and 12.5% respectively took snacks and/or afternoon tea in addition to the 3 main meals.

3.2.2. Water Consumption

Figure 3 illustrates the daily water consumption of the different mothers surveyed. It reveals that 60.9% had consumed 1 to 1.5 liters per day, and 11.81% had consumed less than 1 liter of water per day. In contrast, only 27.27% had consumed more than 1.5 liters per day.

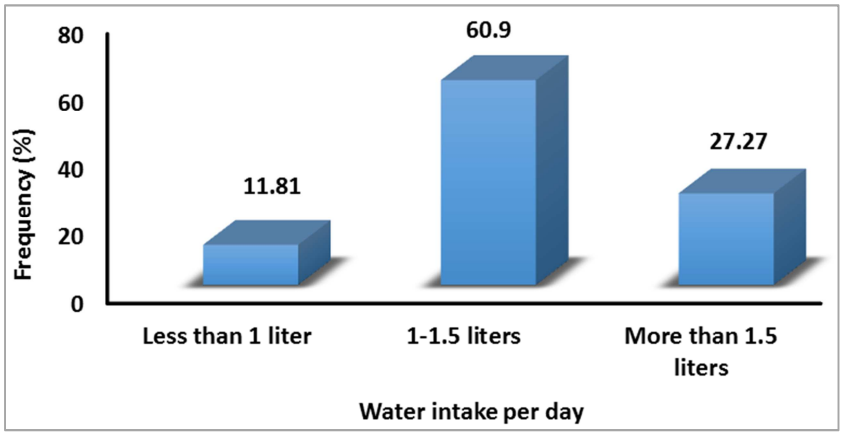

Figure 3. *Distribution of mothers based on the amount of water consumed per day.*

3.2.3. Dietary Profile of Breastfeeding Mothers

Frequency of Food Consumption by Mothers

Figure 4 indicates that the majority of mothers consumed fresh vegetables (99.2%), tubers and cereals (99.2%), meats, fish, and eggs (99.2%), oil (86.7%), sugar (79.1%), and milk and dairy products (58.1%) on a daily basis. However, fruits and legumes were consumed infrequently, in 56.2% and 97% of cases, respectively (Figure 4).

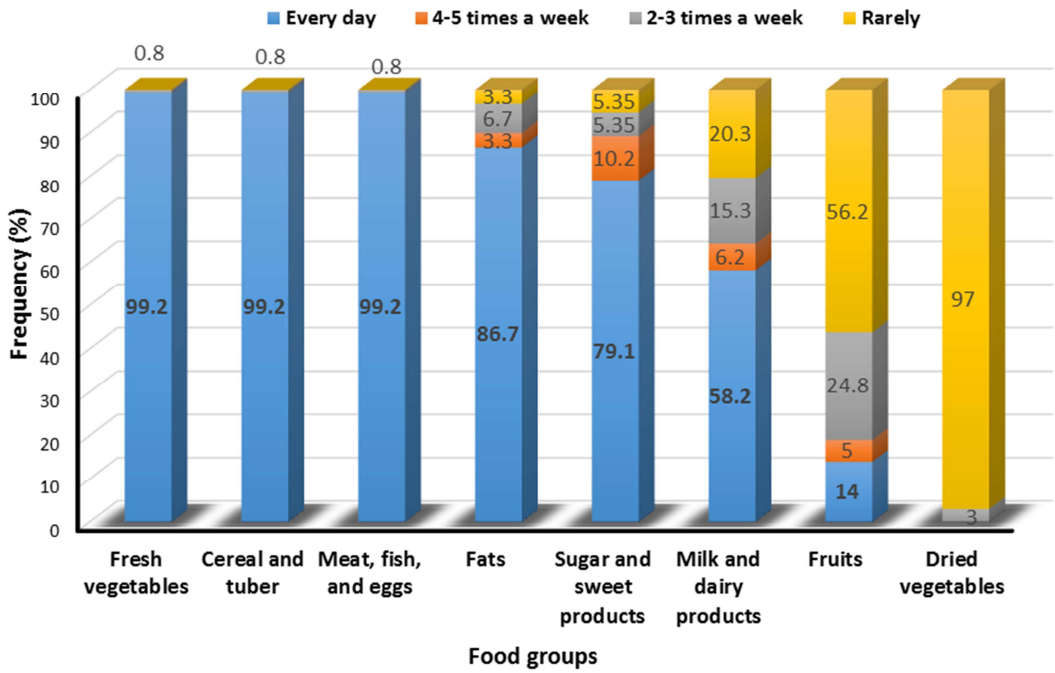

Figure 4. *Distribution of mothers based on the frequency of food consumption.*

3.2.4. Foods Considered Taboo During Breastfeeding

Figures 5 and 6 show that 20% of women abstain from certain foods during breastfeeding. The eliminated foods include legumes (13.51%), animal protein (14.5%), fruits (10.33%), starches (26.26%), vegetables (14.5%), and

sweetened beverages and foods (20.9%) (Figures 6 and 7).

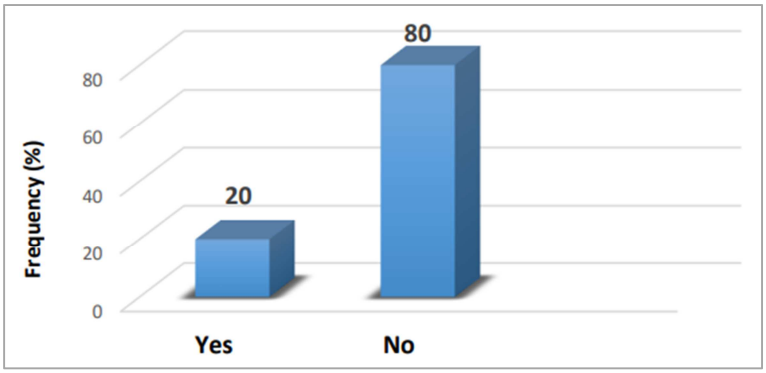

Figure 5. *Distribution of mothers based on the elimination of certain foods.*

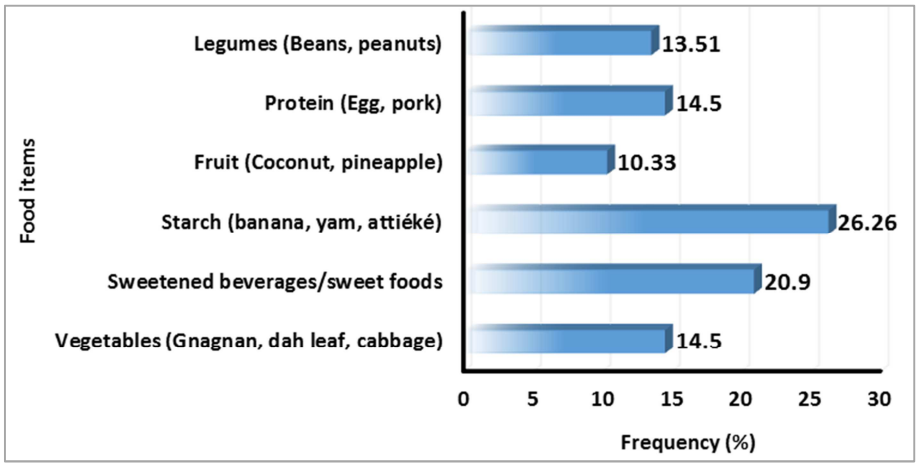

Figure 6. *Foods considered taboo by breastfeeding mothers.*

3.2.5. Alcohol and Tobacco Consumption

Breastfeeding women in Dabou and Bonoua consumed alcohol in 23.3% of cases (Figure 7).

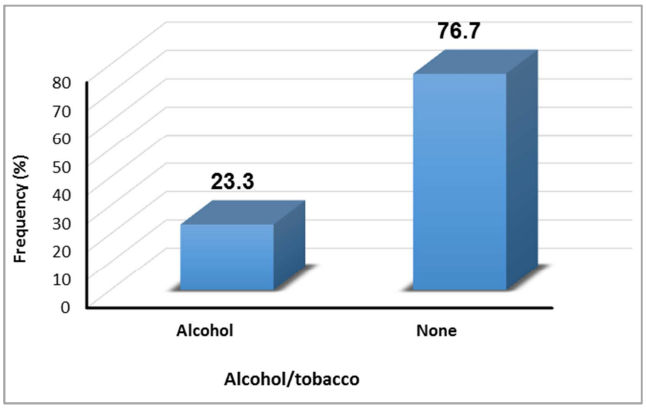

Figure 7. *Distribution of mothers based on alcohol and tobacco consumption.*

4. Discussion

The objective of this study was to assess the dietary practices of breastfeeding mothers in the cities of Dabou and Bonoua.

The survey results revealed that the majority of the mothers surveyed (68.36%) took at least 3 meals (breakfast, lunch, and dinner) during the day. This meal frequency does not align with the recommendations for the diet of breastfeeding mothers. Indeed, the World Health Organization (WHO) generally recommends that a breastfeeding mother consumes about 500 more calories per day than her pre-pregnancy maintenance calorie level. This equates to an additional 2 to 3 snacks (or a minimum of 4 meals/day) [8, 9]. In Côte d'Ivoire, the National Nutrition Program (PNN) recommends that breastfeeding women have two extra meals in addition to their regular meals (totaling 5 meals/day) [10].

As for water consumption, the majority of breastfeeding mothers in Bonoua and Dabou (72.71%) drank less than 1 to 1.5 liters of water per day. This practice may not align with international recommendations. Indeed, the Institute of Medicine (IOM) has established the total water intake at 3.3 L/day for breastfeeding women [11]; the European Food Safety Authority (EFSA) has recommended 2.7 L/day [12], while the Chinese Nutrition Society has set the adequate intake at 3.8 L/day for breastfeeding women [13]. According to the EFSA, based on the recommended 2.7 L of water per day, approximately 1 L should come from food, and the rest (1.7 L) should be provided by beverages [14]. Therefore, the

breastfeeding mothers in our study are not adequately hydrating. An increase in water intake is necessary to meet the increased needs and avoid potential dehydration. Indeed, breastfeeding mothers experience increased water loss through milk secretion. This significant water loss through breast milk exposes women to a high risk of dehydration, which has a detrimental effect on maternal health [15].

Furthermore, recent research in China by Zhou et al. (2019) indicates that the average total water consumption of breastfeeding women in Beijing was 3,218 ± 1,254 mL/day. The largest amount of water came from food (1,472 ± 709 ml), while plain water intake and water from beverages were 1,449 ± 967 ml and 298 ± 277 ml, respectively [16]. Referring to this study, it appears that the breastfeeding women in our study showed good adherence to water consumption.

Thus, the divergence in the aforementioned recommendations does not allow for a conclusive judgment. Therefore, further investigations into total water consumption should be conducted in Côte d'Ivoire to provide tailored recommendations for breastfeeding women.

Regarding food consumption, breastfeeding women in Dabou and Bonoua daily consumed 5 food groups: fresh vegetables (99.2%), tubers and cereals (99.2%), meats, fish, and eggs (99.2%), saturated fat (86.7%), and sugar and sugary products (79.1%). They moderately consumed milk and dairy products (58.2%). However, they rarely consumed fruits (56.2%) and legumes (97%). The diet of breastfeeding mothers in our series is characterized by frequent consumption of saturated fat and added sugar, with a low intake of dietary fiber. Dietary fiber, primarily found in fruits and legumes, stimulates intestinal transit and helps relieve the constipation that many mothers experience after childbirth [17]. Additionally, the quality of the fatty acids in breast milk is strongly influenced by the mother's diet [18]. This diet, low in unsaturated fatty acids, could compromise the infants' cognitive health. Moreover, mothers' exposure to high sugar consumption and sugary products could make children more susceptible to developing liver or cardiovascular problems in adolescence or adulthood [19]. Thus, a poorly balanced diet can compromise a mother's health and energy by depleting her nutritional reserves [20]. Therefore, balanced eating is particularly important when breastfeeding a baby, as the needs for calories and specific nutrients increase, and certain foods can alter the composition of breast milk [17].

Moreover, it was observed that some breastfeeding mothers (20%) excluded certain foods from their diet. This adherence is likely influenced by sociocultural factors such as traditions and cultural beliefs. According to [21], maternal experience is influenced by various prescriptions from the community to which they belong. These prescriptions are related to diet and behavior and are under the control of mothers, sisters, extended family members, grandmothers, etc. [22]. According to our breastfeeding mothers, the consumption of these foods could impact the quality and taste of the milk and also cause diarrhea, bloating, and abdominal pain in babies. Our results are closely aligned with those of Mamelontsoa in 2012. Her study showed that 19.2% of breastfeeding women abstain from certain foods during breastfeeding. The most prohibited foods included coconut, tubers (sweet potato, cassava, taro), chili, and legumes. Some mentioned that these foods caused diarrhea in breastfed children, while others stated that they imparted an unsuitable taste and odor to the milk [3]. According to the Hausa tradition, breastfeeding women are traditionally advised against eating meat and fruits like mango and orange, as they are believed to delay or reduce lactation. If these prohibitions are not followed, they could suffer from a condition called "Zahi," which, depending on the case, is associated with sweetness or warmth [9].

Alcohol consumption by mothers (23.3%) may also be influenced by certain beliefs. They suggested that alcohol consumption could promote milk production. This belief persists in a portion of the French population as well, as an unpublished study from Santé publique France reports that 17% of mothers believe that consuming beer helps with lactation [23]. However, alcohol consumption during breastfeeding is not galactagogue and does not promote breastfeeding, as some beliefs suggest [24]. Alcohol passes into breast milk and is found at the same concentration as in maternal blood. The time required for the elimination of alcohol in breast milk after consumption is prolonged: for example, it is necessary to wait between 2 to 3 hours for one drink (≈ 340 ml of 5% beer, 140 ml of 12% wine, 45 ml of 40% liqueurs) for an average-weight woman (between 50 and 80 kg), and between 4 and 5 hours for two drinks [23]. This is incompatible with on-demand breastfeeding practiced by our breastfeeding mothers. Alcohol should be avoided during the breastfeeding period as it reaches the child through breast milk. Regular or excessive alcohol consumption can impair the psychomotor development of the child [25].

5. Conclusion

The results of this study highlight the dietary practices adopted by breastfeeding mothers. It emerges from this analysis that the meal frequency and water consumption of the majority of mothers did not adhere to recommended standards. Furthermore, variations were observed in the consumption of certain food groups, with a marked predominance of fresh vegetables, tubers, cereals, meats, fish, eggs, and oil. It is concerning to note that essential nutrients, such as fruits and dried vegetables, were less frequently consumed, and a significant proportion of women abstained from certain foods during the breastfeeding period. Additionally, the consumption of alcohol by a quarter of breastfeeding mothers raises concerns about its potential impact on infant health.

This study provides valuable insights into the dietary practices of breastfeeding mothers, emphasizing the need for increased awareness and targeted nutritional education to promote optimal food choices. Future research could focus

on the effectiveness of specific educational programs and approaches aimed at positively influencing dietary habits within this specific population.

Abbreviations

EFSA: European Food Safety Authority
CNESVS: National Committee on Ethics of Life and Health Sciences
PNN: National Nutrition Program
UNICEF: United Nations Children's Fund
WHO: World Health Organization

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Conflicts of Interest

The authors declare no conflicts of interest.

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