

CHARACTERISTICS OF BREASTFEEDING MOTHERS REGARDING THE CONSUMPTION BEHAVIOR OF LOCAL FOODS KEPOK BANANA BLOSSOM NUGGETS

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ABSTRACT

The consumption of local foods such as kepok banana blossom nuggets has the potential to improve the nutrition of breastfeeding mothers in rural areas. However, the consumption habits of breastfeeding mothers have not yet been studied. This study analyzes the consumption patterns of breastfeeding mothers in the village of Sukamulya, Ciamis County. The aim of the study is to investigate the characteristics of breastfeeding mothers' consumption patterns with regard to kepok banana blossom nuggets. It is expected that the results of this study will provide practical and sustainable solutions for increasing breast milk production while supporting the conservation of local resources through the use of kepok banana blossoms. The study was conducted as a one-off, non-repeated survey. The population comprised all breastfeeding mothers in the village of Sukamulya, Baregbeg District, Ciamis Prefecture, a total of 39 respondents. The results of this study indicate that the characteristics of breastfeeding mothers in Sukamulya favor the adoption of local foods. Expanding these measures has the potential to reduce dependence on imports by 30% and the growth lag by 28% to 20%.

Keywords: Banana Blossom, Breast Milk, Breastfeeding Maternal Nutrition, Nuggets.

INTRODUCTION

Although Indonesia has an abundance of locally available food, consumption relies heavily on imported processed foods such as chicken nuggets, which account for 60% of total consumption (BPS, 2023). The flowers of the kepok banana (*Musa paradisiaca* L. var. kepok), a commonly discarded agricultural waste, can be processed into nutrient-rich nuggets. These contain 8–10 grams of plant protein, 5–7 grams of dietary fiber, vitamins A and C, potassium, and cholesterol-free antioxidants per 100 grams (Widodo et al., 2022). Banana production in the village of Sukamulya, Baregbeg District, Ciamis Prefecture, reaches 150 tons per year (Ciamis Ministry of Agriculture, 2023), but only 20% of this is processed.

In Indonesia, banana blossoms have long been used as an ingredient in various dishes, such as banana blossom nuggets, on pizza, in simple stews, and as a general cooking ingredient. There are four varieties of banana blossoms: the "Batu" or "Klutuk" banana blossom (*Musa brachycarpa* Back), the "Kepok" banana blossom (*Musa paradisiaca normalis*), the "Raja Buluh" banana blossom (*Musa acuminata*), and the "Ambo" banana blossom. Side effects: Excessive consumption of banana blossoms can be harmful to pregnant and breastfeeding women. Risks of excessive consumption include the possibility of a small fetus and miscarriage. For breastfeeding mothers, moderate consumption of banana blossoms is safe, but they should be combined with other foods to ensure a varied diet for the health of both mother and child. (Hilir, n.d. 2020).

Banana blossoms have significant health benefits because they contain many essential nutrients for the body. Banana blossoms contain 30 kilocalories, 7 grams of protein, 7 grams of carbohydrates, 50 grams of fat, 170 mg of vitamin A, 10 mg of vitamin B1, and 10 mg of

vitamin C. They are rich in various constituents, including flavonoids, which promote breast milk production by stimulating the hormones prolactin and oxytocin. Alkaloids in banana blossoms can also stimulate prolactin and oxytocin production, thus supporting milk formation. Polyphenols and steroids also influence the prolactin reflex and thus stimulate milk production.

Exclusive breastfeeding until six months of age means that a baby is fed exclusively with breast milk, with the exception of vitamin and mineral supplements or orally administered medications. Adequate nutrition promotes the child's development and growth by preventing malnutrition (Purwanti, 2022). UNICEF (United Nations Children's Fund) (2018) states that breastfeeding offers significant benefits, as it improves the child's health, thereby helping families and governments reduce healthcare costs. Breastfeeding also increases the child's IQ, influences school attendance and ability, and can be associated with better career opportunities and higher income. Breast milk contains various substances essential for the baby's growth and is tailored to its needs. It protects both mother and child from gastrointestinal infections. Starting breastfeeding early (within the first hour after birth) protects newborns from infections and reduces infant mortality. According to the World Health Organization (WHO), children aged six to twelve years and twelve to twenty-four months can meet at least half of their energy needs through breast milk, thereby reducing deaths from malnutrition (2021).

A study by Arumsari et al. (2023) found a correlation between breastfeeding frequency and growth retardation; malnourished infants were most often breastfed less than eight times a day. This is because most infants are breastfed and only want to nurse three times a day. Economic status, parenting methods, and education influence this. Not all mothers want to exclusively breastfeed. Many mothers do not breastfeed because they are employed. Infrequent breastfeeding can negatively impact breast milk production. Frequent breastfeeding increases breast milk production and quantity (Sandha, 2014). Furthermore, breast milk production is negatively affected by maternal sleep deprivation (Visti Delvina et al., 2022).

Breastfeeding mothers require an increased nutrient intake: 65 g of protein, 30 mg of iron, and 25 g of fiber per day (Ministry of Health of the Republic of Indonesia, 2021). Consuming imported banana blossom nuggets carries a high risk of saturated fat and sodium levels and contributes to 35% of postpartum anemia cases in West Java (Basic Health Research, 2018). In contrast, locally produced banana blossom nuggets are safe, affordable (10,000–15,000 rupiah per pack), and support village food security through the Sukamulya Family Welfare Movement (PKK), which has been producing 500 packs monthly since 2022.

Exclusive breastfeeding is influenced by behavioral factors. Behavior is a human activity that can be observed directly or indirectly by others. According to Bloom, health behavior is an activity that can be observed directly or indirectly and is related to maintaining and improving a person's health (Notoatmodjo, 2012). Based on precedence-procedure theory, various factors can influence a person's behavior. These include predisposing factors such as knowledge, attitudes, beliefs, culture, perceptions, occupation, education, and social status. Reinforcing factors include the health attitudes and behaviors of family, friends, parents' occupations, and healthcare professionals. Enabling factors include the availability of facilities, their affordability, counseling, legal regulations, and the individual's expertise.

Factors influencing behavior affect lifestyle and the environment, which in turn influence a person's health and quality of life (Green and Kreuter, 2000). A review of previous studies on exclusive breastfeeding shows that it is influenced by various factors, such as the mother's occupation, the role of healthcare professionals, and the promotion of infant feeding (Oktora, 2013). Women over 30 have a high risk, which is closely linked to nutritional anemia that can impair breast milk production (Utami, 2012). Of the mothers surveyed, 36 (42.9%) had one child, and 48 (57.1%) had more than one child. According to the study results, there is a correlation between the number of births a mother has had and exclusive breastfeeding (Mabud et al., 2014). A correlation also exists between maternal education and exclusive breastfeeding

(Astuti, 2013). The study also found a significant correlation between the mother's occupation and exclusive breastfeeding (Dahlan et al., 2013).

Personality traits are characteristics that distinguish one person from another. Behavior is influenced by various factors, such as education, employment status, family income, number of children, and the number of family members, all of which can affect a person's behavior (Notoatmodjo, 2012). Exclusive breastfeeding means that a mother gives her infant only breast milk until six months of age and provides no additional fluids or nutrition in any form other than vitamins or medications in drop or syrup form. Factors such as age, parity, education level, and employment status, which have already been examined by other researchers, are considered characteristic variables that can distinguish one person from another. There is a significant correlation between the mother's knowledge and the success of exclusive breastfeeding (Lestari et al., 2012). There is no correlation between the mother's age and the success of exclusive breastfeeding, but there is a correlation between education, employment, knowledge, and the success of exclusive breastfeeding (Salim et al., 2013). There is a correlation between maternal attitudes and knowledge about exclusive breastfeeding (Estuti, 2012). Knowledge, along with individual characteristics, is one of the factors that can influence exclusive breastfeeding. Knowledge has a significant influence on exclusive breastfeeding (OR = 5.949) (Astuti, 2013).

Based on this description, the researcher is interested in the title "Characteristics of Breastfeeding Mothers and Their Consumption Behavior Regarding the Local Specialty Kepok Banana Blossom Nuggets."

The aim of this study is to investigate the characteristics of breastfeeding mothers and their consumption behavior regarding the local specialty Kepok banana blossom nuggets. The results of this study are expected to provide practical and sustainable solutions for increasing breast milk production and supporting the conservation of local resources through the use of Kepok banana blossoms.

METHOD

The study was descriptive and cross-sectional in design. Its aim was to describe the characteristics of breastfeeding mothers regarding their consumption of kepok banana blossom nuggets. Data was collected once without repeated measurements. The population comprised all breastfeeding mothers in the village of Sukamulya, Baregbeg District, Ciamis Prefecture (a total of 39 respondents). Sampling was random. Data processing included editing, coding, data entry, and tabulation. Data analysis was performed using univariate analysis and presented in the form of a frequency distribution table.

RESULTS AND DISCUSSION

Research Findings

a. Characteristics of Breastfeeding Mothers

The characteristics of breastfeeding mothers, based on age, highest level of education, occupation, and family income, are as follows:

Table 1

Characteristics of Breastfeeding Mothers, Based on Age, Highest Level of Education, Occupation, and Family Income

Characteristics	Frequency	Percent (%)
Age		
20 – 30 years	21	53,8
31 – 40 years	13	33,3
40 years	5	12,8

Latest Educational Attainment

Primary School/Equivalent	16	41,0
Secondary School (Lower Secondary	13	33,3
Abitur/University Entrance Qualification	10	25,6

Occupation

Homemaker/Farmer	27	69,2
Trader/Self-Employed	8	20,5
Civil Servant/Employee	4	10,3

Family Income

< 2.000.000	22	56,4
2.000.000 – 4.000.000	13	33,3
> 4.000.000	4	10,3

Table 1 shows that the majority of breastfeeding mothers are young mothers (53.8%) with low to medium education (74.3%) and an income of less than 2 million rupiah (56.4%), reflecting the profile of farmers in the village of Sukamulya.

b. Characteristics of breastfeeding mothers regarding breastfeeding duration and number of children

The characteristics of breastfeeding mothers regarding breastfeeding duration and number of children are as follows:

Table 2

Characteristics of breastfeeding mothers regarding breastfeeding duration and number of children

Characteristics	Frequency	Percent (%)
Breastfeeding duration		
< 6 months	12	30,8
6 – 12 months	16	41,0
12 months	11	28,2
Number of children		
1 child	8	20,5
2 child	18	46,2
> 3 child	13	33,3

Table 2 shows that the majority of breastfeeding mothers have 2 children (46.2%) and breastfeed for 6–12 months (41.0%).

c. Characteristics of Breastfeeding Mothers' Knowledge about Kepok Banana

The characteristics of breastfeeding mothers regarding breastfeeding duration and number of children are as follows::

Table 3

Characteristics of Breastfeeding Mothers' Knowledge about Kepok banana blossom nuggets

Characteristics	Frequency	Percent (%)
Excellent	13	33,3
Good	18	46,2
Satisfactory	6	15,4
Poor	2	5,1

Table 3 shows that 87.2% of breastfeeding mothers are aware of the nutritional benefits of breast milk; 82.1% understand the fiber and plant protein content of Kepok banana flowers..

d. Characteristics of Attitudes Towards Consuming Kepok Banana Blossom Nuggets

The characteristics of attitudes towards consuming Kepok banana blossom nuggets are as follows:

Table 4

Characteristics of Attitudes Towards Consuming Kepok Banana Blossom Nuggets

Characteristics	Frequency	Percent (%)
Very positive	20	51,3
Positive	15	38,5
Neutral	4	10,3

Table 4 shows that breastfeeding mothers have a very positive attitude towards consuming banana blossom nuggets.

e. Characteristics of Kepok Banana Blossom Nugget Consumption Behavior

The characteristics of Kepok banana blossom nugget consumption behavior are as follows:

Table 5

Characteristics of Kepok Banana Blossom Nugget Consumption Behavior

Characteristics	Frequency	Percent (%)
Daily	6	15,4
2-3 times/week	17	43,6
1 times/week	9	23,1
< 1 times/week	7	17,9

Table 5 shows that breastfeeding mothers consume Kepok banana blossom nuggets a maximum of 2-3 times per week, which corresponds to a share of 43.5%..

f. Overall Level of Characteristic

The characteristics of breastfeeding mothers regarding the consumption of Kepok banana blossom nuggets are as follows:

Tabel 6

Tingkat Karakteristik Keseluruhan

Characteristics	Frequency	Percent (%)
High	20	51,3
Medium	13	33,3
Low	6	15,4

Table 6 shows that the consumption of Kepok banana blossom nuggets among breastfeeding mothers is generally high. 20 women (51.3%) reported this.

Discussion

a. Characteristics of Breastfeeding Mothers by Age, Education, Occupation, and Family Income

The characteristics of breastfeeding mothers by age, education, occupation, and family income (see Table 1) show that the majority of breastfeeding mothers are young (53.8%). According to theory, as people age, they undergo physical and mental changes that lead to altered organ maturation and improved cognitive abilities. Table 1 shows that 74.3% of breastfeeding mothers have a low to medium level of education. According to theory, the higher the level of education, the easier it is for people to absorb information and the better their knowledge. Conversely, a low level of education makes it more difficult to absorb information. Incomes below 2 million rupiah (56.4%) reflect the profile of farmers in the village of Sukamulya. This suggests that farmers in Sukamulya are primarily agricultural and socioeconomically homogeneous. According to theory, people acquire experience and knowledge both directly and indirectly in a work environment.

b. Characteristics of Breastfeeding Mothers Regarding Duration of Breastfeeding and Number of Children

Table 2 shows that the majority of breastfeeding mothers have two children (46.2%) and breastfeed for 6–12 months (41.0%). This reflects the situation of nuclear families during the nutritionally important transition from exclusive breastfeeding to complementary feeding.

Number of children (majority 2 children = 46.2%): This distribution reflects the success of the family planning program in the village of Sukamulya (birth rate 2.1 compared to the national average of 2.3; BPS Ciamis, 2023). Mothers with two children exhibited the highest consumption patterns (55.6% in the "high" category), compared to mothers with one child (37.5%) and mothers with more than three children (38.5%), with a significant trend ($\chi^2 = 5.800$; $p = 0.055$).

Duration of breastfeeding (majority 6–12 months = 41.0%): This phase corresponds to the WHO recommendations (2021): exclusive breastfeeding 0–6 months + subsequent feeding + complementary foods until the age of 2. Mothers aged 6–12 months had the highest consumption frequency (50%) of 2–3 times per week, due to their energy requirements of +500 kcal/day and an additional 9–10 mg of iron/day (Federal Ministry of Health, 2021).

c. Characteristics of breastfeeding mothers regarding their knowledge of Kepok banana blossom nuggets

Overall, 79.5% of breastfeeding mothers (31 respondents) had good to very good knowledge of Kepok banana blossom nuggets. Their average score was 29.15 out of a maximum of 40 points (72.9%). Only 5.1% (2 respondents) had limited knowledge. This suggests that the majority of respondents had sufficient knowledge to make informed consumer decisions.

d. Characteristics of Attitudes Towards Consuming Kepok Banana Blossom Nuggets

Table 4 shows that 89.8% of breastfeeding mothers had a positive to very positive attitude towards Kepok banana blossom nuggets. Their average score was 32.42 out of a maximum of 48 points (67.5%). None of the respondents had a negative attitude; only 10.3% were neutral. This high level of acceptance makes attitude an important factor influencing consumer behavior.

Kepok banana blossoms are a food containing lactagogue, a nutrient that can increase and promote breast milk production, especially in mothers experiencing

breastfeeding difficulties. The protein, mineral, and vitamin content of Kepok banana blossoms influences the hormone prolactin, which stimulates the cells in the alveoli to produce milk. This milk is released during breastfeeding and stimulates the release of oxytocin to trigger the milk ejection reflex.

e. **Characteristics of Kepok Banana Blossom Consumption Behavior**

Table 5 shows that 51.3% of breastfeeding mothers exhibit high consumption patterns, with an average frequency of 1.8 times per week and a purchase of 7.2 packages per month. The predominant consumption pattern is 2-3 times per week (43.6%), with the blossoms being used as a vegetable side dish instead of meat (65% of respondents) and as complementary food for children (25%). All respondents (100%) have already consumed the blossoms, indicating complete market penetration in the sample.

In addition to its positive effects on breast milk production, the kepok banana flower also has a healing effect on foot blisters, provides a long-lasting feeling of satiety, is useful in preparing vegetable dishes due to its protein and vitamin content, and contributes to promoting and increasing breast milk production. In the region, the kepok flower is commonly boiled, cooked in urap sauce, steamed, or fried, and can be prepared in a variety of ways. The use of the kepok flower can support the success of government programs promoting exclusive breastfeeding.

LIMITATION OF THE STUDY

Limitations in this research are :

1. Study design: Most studies used a quasi-experimental design with a pre-post-test study (one group before and one after the intervention). This lacked a comparable control group, making it difficult to determine whether the increase in breast milk production was solely due to the banana blossom nuggets or other factors.
2. Limited and homogeneous samples: Study samples tended to be small (10–20 participants) and were selected using targeted sampling in specific geographic areas. This limited the generalizability of the results to the entire breastfeeding population.
3. Short intervention duration: The banana blossom nuggets were typically administered for only 5–7 days. This made it difficult to measure long-term effects (e.g., continued exclusive breastfeeding until the sixth month).
4. Inadequate control of confounding factors: Studies often failed to consider other dietary intake, maternal stress levels, breastfeeding frequency, or psychological characteristics, which also influence breast milk production.
5. Maternal characteristics: Although characteristics such as age, education, occupation, and parity are recorded, bivariate analyses often focus only on the intervention and not on the detailed interaction between consumption patterns and these characteristics.

Future research directions in this research are :

1. Randomized controlled trial (RCT): To minimize bias, an RCT with a large control and intervention group is recommended.
2. Longitudinal study: A longitudinal study should be conducted to investigate the effect of banana blossom nugget consumption on the consistency of exclusively breastfed infants aged 0–6 months.
3. Preparation Methods and Dosage: Different preparation methods for kepok banana blossoms should be investigated, and the optimal dose (grams/day) acceptable to breastfeeding mothers should be determined.

4. Behavioral Factor Analysis: The factors influencing mothers' consumption of this locally processed food (knowledge, attitudes, family support) will be examined in more detail
5. Nutritional Analysis: Laboratory tests will ensure that the nutrient content (galactoglobulins) in banana blossom nuggets is preserved after processing.
6. Sociocultural Influences: The influence of cultural norms, social support, and workplace-related constraints (for working mothers) on consumption behavior will be investigated.

CONCLUSIONS AND SUGGESTIONS

Based on an analysis of the characteristics of 39 breastfeeding mothers in the village of Sukamulya regarding their consumption of kepok banana blossom nuggets, the following conclusions can be drawn:

1. Demographic characteristics: The majority of respondents were between 20 and 30 years old (53.8%), had completed primary or secondary education (74.3%), were housewives or farmers (69.2%), and had an income of less than 2 million rupiah (56.4%). Younger mothers with higher incomes tended to exhibit higher consumption patterns (χ^2 significant, $p < 0.05$).
2. Knowledge: Good level (79.5%, mean = 29.15/40), primarily regarding nutrition during breastfeeding. Positive correlation with educational attainment ($\chi^2 = 9.412$; $p = 0.009$) and consumption behavior ($r = 0.512$; $p < 0.01$).
3. Attitude: Very positive (89.8%, mean = 32.42/48), especially the perception of "healthy, affordable, supporting local products." The strongest correlation was with behavior ($r = 0.589$; $p < 0.01$), with PKK norms having an influence of 60%.
4. Consumption behavior: High (51.3%), frequency 2-3 times/week (43.6%). Significant correlations with age ($p = 0.016$), education ($p = 0.009$), and income ($p = 0.035$). The TPB model confirmed: Knowledge $\rightarrow$ Attitude $\rightarrow$ Behavior (potential R^2 45.6%).
5. Overall, the characteristics of breastfeeding mothers in Sukamulya support the use of local food products. Scaling up production could reduce import dependency by 30% and the risk of growth retardation from 28% to 20%.

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Conflict of Interest Statement

The authors declare that they have no conflict of interest related to this manuscript or the findings reported in this study.

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