JHE 10 (2) (2025)

Journal of Health Education

http://journal.unnes.ac.id/sju/index.php/jhealthedu

Behavioral and Social Factors Influencing Sweetened Condensed Milk Consumption in Toddlers in Semarang

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Article Info

Article History:
Submitted 19 September 2025
Accepted 18 December 2025
Published 30 December 2025

Keywords:
behavior, social, sweetened condensed milk, oddler,

DOI
https://doi.org/10.15294/jhe.v10i2.33909

Abstract

Background: Continuous consumption of sweetened condensed milk can inhibit the optimal growth and development of children aged 1-3 years. These consumption habits in toddlers impact their nutritional status, including the risk of being overweight, obese, and undernourished. This study aims to determine the determinants of sweetened condensed milk consumption in toddlers from a behavioral and social perspective in the Sekaran and Bandarharjo Health Center Area, Semarang City.
Methods: This study employs quantitative research with observational and analytical methods, utilizing cross-sectional approaches. The respondents in this study were 100 toddlers residing in Sekaran and Bandarharjo Health Centers, Semarang City. The sampling technique employed was purposive sampling, and data analysis was conducted using univariate analysis with frequency distribution, bivariate analysis with the Pearson statistical test or Spearman Rank correlation ($\alpha = 5\%$), and multivariate analysis with logistic regression.
Results: Approximately 35.8% of children had been provided with sweetened condensed milk for no less than twelve months, while 41.2% were reported to consume it three or more times within a single day. The elevated intake of sweetened condensed milk observed in this study demonstrated a statistically significant correlation with lower maternal educational attainment ($p = 0.028$). Notably, although 51.0% of surveyed mothers acknowledged that sweetened condensed milk is a sugar-laden beverage with added milk content, it is still administered to toddlers.
Conclusions: In conclusion, despite over half of mothers recognizing sweetened condensed milk as a sugar-rich beverage with added milk, its frequent administration to toddlers—often three or more times daily and sustained for over a year—is significantly associated with lower maternal education levels, highlighting a critical gap in nutritional awareness and practice. The consumption of sweetened condensed milk among toddlers remains relatively high, and this elevated intake is influenced by maternal education

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p-ISSN 2527-4252
e-ISSN 2528-2905

INTRODUCTION

The success of meeting nutritional needs during toddlerhood will determine the quality of life of toddlers in the future. Failing to meet proper nutritional needs in toddlerhood can lead to various health issues, including malnutrition and overnutrition. The problem of malnutrition in toddlers that is still a concern is stunting. Stunting in children under five in Indonesia will reach 21.5 percent in 2023 (Ministry of Health of the Republic of Indonesia, 2024). This figure decreased compared to the incidence of stunting in 2022, which was 21.6 percent, and most occurred in toddlers aged 24 to 36 months (Health Development Policy Agency, 2023). Despite the decrease, the incidence rate is still far from the target of reducing stunting in Indonesia, which is 14% (National Team for the Acceleration of Poverty Alleviation, 2018). Another problem that arises due to the incompatibility of meeting nutritional needs in toddlers is overnutrition. Overnutrition in toddlers in 2022 was 3.5 percent, and in 2023, it was 4.2 percent (Health Development Policy Agency, 2023;Ministry of Health of Indonesia, 2024). Both undernutrition and overnutrition problems in toddlers can potentially increase the risk of non-communicable diseases early and reduce the quality of life when entering the next life cycle stage.

Consumption patterns and environmental and social aspects greatly influence the high level of nutritional problems in toddlers (Noflidaputri & Febriyeni, 2020). Consumption patterns in toddlers are related to the feeding given by mothers or caregivers food diversity, portion size, or frequency. .

Children's eating habits are shaped by family feeding practices, community cultural norms, and dietary behaviors that are established and developed within the family environment through socialization processes, all of which can influence their nutritional status (Eka Masturina et al., 2023; Noflidaputri & Febriyeni, 2020). Caregiver feeding practices for children under five play a crucial role in preventing stunting. According to the World Health Organization, infants should be exclusively breastfed for the first six months and subsequently receive complementary foods that are safe, nutritionally sufficient, and appropriately provided from six to 24 months of age to support optimal growth. However, despite these guidelines, issues of inadequate or excessive feeding among caregivers persist. Current statistics indicate that exclusive breastfeeding coverage is 41%, while only 25% of young children achieve the Minimum Dietary Diversity, and 51% meet the Minimum Meal Frequency (Millanzi et al., 2023).

Feeding toddlers according to their individual needs can be achieved by paying attention to the quality and quantity of food they consume, which, in turn, will impact their nutritional status. Not only does it pay attention to what is eaten, but also the attitude or role of mothers in giving more attention to the eating habits of toddlers, as well as introducing various types of food to them (Petralina, 2020). By 2024, as many as 60.39 percent of children aged 6–23 months in Indonesia are expected to consume at least five of the eight food and beverage groups daily (Central Statistics Agency, 2024). The 2018 Basic Health Research shows that children aged 3-4 consume the most sugary foods and drinks. As many as 81.6 percent and 40 percent of children aged 6 to 35 months consume commercial snacks and sweetened beverages (Ministry of Health of the Republic of Indonesia, 2018). As many as 29.3% of children in urban Indonesia aged 3-5 years consume sweetened condensed milk regularly (Prawirohartono et al., 2015).

The consumption pattern of toddlers in Indonesia shows that sweetened condensed milk has been used as a substitute for formula or breast milk because it is cheaper than formula milk. Sweetened condensed milk is a dairy product that contains 44% sugar, which is mainly used as a cooking ingredient, so it is unsuitable for toddlers (Juffrie et al., 2020a) Sweetened condensed milk may contribute to energy and sugar intake, but has fewer nutrients. Consumption of this as a substitute for milk without adequate micronutrient intake from food can lead to micronutrient deficiencies, and the high sugar content of sweetened condensed milk can increase the risk of obesity in toddlers. Continuous consumption of this can inhibit the optimal growth and development of children aged 1-3 years. This can impact their nutritional status,

including the risk of overnutrition, obesity, and undernutrition (Hidayat et al., 2022). The consumption of sweetened condensed milk is largely due to mothers perceiving this beverage as milk, and as many as 32% of mothers in Kendari give sweetened condensed milk as a daily drink. In Batam, 25% of mothers give their toddlers sweetened condensed milk as a daily drink. The reasons are that children do not want other milk, economic factors, mothers' knowledge, and exposure to product advertisements on television. The impact of sweetened condensed milk consumption in Kendari showed that children become less likely to eat, leading to diarrhea, nutritional illness, obesity, malnutrition, diabetes, and vomiting (Yudistira et al., 2022). Based on this background, the researcher is interested in determining the determinants of sweetened condensed milk consumption in toddlers from a behavioral and social perspective at Sekaran and Bandarharjo Health Center, Semarang City.

METHODS

This research is a quantitative-correlational study, which aims to test existing theories by examining the relationships between variables using an analytical observational method. The study tests the relationship between causal factors and consequence factors. The approach used is cross-sectional, a research method carried out simultaneously at a particular time in a specific population. The population of this study consists of toddlers aged 0–59 months who reside in Semarang City. The sample in the study was 100 toddlers aged 0 – 59 months. The sampling technique used is purposive sampling, which considers several aspects according to the criteria needed in the research. The inclusion criteria in this study are: 1) toddlers who live in the Sekaran and Bandarharjo Health Center area, Semarang City; 2) aged 0 – 59 months and living with mother in one house; 3) have not experienced health problems for the past 1 month; 4) have no genetic disorders; 6) Toddler mothers are willing to be respondents, are aware, and can communicate well and sign informed consent. The sample exclusion criteria in this study were: 1) change of domicile during data collection; 2) pain during data collection; 3) not following the entire research stage.

This study's independent variables are the nutritional status of toddlers, family income, socio-cultural (race), parental work, parental education, parental knowledge, parenting style, food selection preferences, family support,

This study's dependent or outcome variable is the consumption of sweetened condensed milk in toddlers. The research instruments used in this study are semi-quantitative food frequency questionnaire to find out the consumption of sweetened condensed milk and eating preferences, anthropometric tools (digital scales, infant meters, microtoise, baby digital scales), structured questionnaire to find out parental knowledge, parental education level, parental occupation, socio-cultural (race), and family support, parental Style and Dimension Questionnaire (PSDQ) to find out parenting styles related to feeding, which had been modified and demonstrated a Cronbach's alpha value of 0.729

The data collection technique in this study was carried out by direct measurement to obtain nutritional status data and interviews with mothers or caregivers to find out the intake of sweetened condensed milk, family income, socio-cultural (race), parental occupation, parental education, parental knowledge, parenting, dietary preferences, and family support.

The procedure for this research includes the preparation stage for this research will involve the research licensing process, managing ethical clearance at Medical Faculty of Universitas Negeri Semarang, and preparing the research instruments. The research stage was conducted to collect the necessary variable data for this study, including sweetened condensed milk intake, nutritional status of toddlers, family income, socio-cultural background (race), parental occupation, parental education, parental knowledge, parenting styles, dietary preferences, and family support. This stage is carried out after the research. At this stage, the data obtained is categorized based on existing categories, and then data analysis is carried out to draw conclusions from the research.

Univariate analysis was used to analyze respondent characteristics. The results will be presented in both tabular and narrative forms.

This data has more than 30 respondents, so its normality will be tested with the Kolmogorov test. The Spearman Rank test was used to perform bivariate analysis. The multivariate analysis employed a logistic regression test to identify the variables influencing sweetened condensed milk consumption in toddlers. This test has a 95% strength and is considered significant if $p < 0.05$.

RESULTS

Table 1 explains the characteristics of parents of toddlers who consume sweetened condensed milk. This shows that as many as 40.2% of respondents were mothers in the age range of 31–40 years, with the majority (52.9%) owning a home. Based on the characteristics of education and employment, it was known that 42.2% of mothers were high school graduates, and 66.7% do not work or play the role of housewives. Meanwhile, the education level of the respondents' fathers was mainly at the junior high and high school levels (39.2% each), with 28.4% working as laborers. As many as 53.9% of families in this study have an income below the Regional Minimum Wage of Semarang City, IDR 3,454,827. In addition, 55.9% of families have several family members between five and six people. Based on the results of interviews regarding tribal backgrounds, it is known that most respondents (99%) are from the Javanese tribe.

The gender distribution of toddlers shows a relatively balanced proportion, namely 46.1% of boys and 53.9% of girls. As many as 69.6% of children under five have received complete basic immunization, and 84.3% have initiated early breastfeeding. Timely complementary food was recorded in 65.7% of toddlers. In the last three months, as many as 48.58% of toddlers who consumed sweetened condensed beverages experienced health problems. Health problems experienced by as many as 28.4% of toddlers have a history of diarrhea, 12.84% have acute respiratory infections, 4.59% suffer from pneumonia, and 2.75% have tuberculosis. In comparison, 51.38% do not have an infection. Most toddlers (97.1%) were monitored for growth by their parents, while only 2.9% did not receive such monitoring. The nutritional status of toddlers showed that 70.6% were in the category of good nutrition, 12.7% undernourished, 6.9% malnourished, 4.9% at risk of obesity, 3.9% overweight, and 1% classified as obese.

The results showed that 25.77% of toddlers consumed rice porridge, team rice, or mashed rice as complementary food. As many as 20.77% of toddlers consumed instant porridge, while another 10.77% were recorded to consume sweetened condensed cream or sweetened condensed creamer as complementary food. This needs to be a concern, because sweetened condensed cream/ sweetened creamer is not recommended for children under two years old because of its high sugar content and low nutritional value.

As presented in Table 2, the administration of sweetened condensed milk to toddlers presented in Table 2 was most commonly given in sachets, which is 76.5%. As many as 41.2% of toddlers began to be given sweetened condensed milk at more than 12 months, but 6.9% of toddlers had received sweetened condensed milk since the age of less than 6 months. The average frequency of consumption of sweetened condensed milk is 1–2 times per day, with 21.6% of toddlers recorded as consuming sweetened condensed milk more than three times per day.

The main reasons for mothers giving sweetened condensed milk to children were affordable prices (23.7%) and other reasons (45.19%). Other reasons given include the fact that parents follow the child's wishes, the child asks for it directly, the influence of the environment around the place of residence, such as the presence of sweetened condensed products in the surrounding environment, and the ease of obtaining these products around the respondent's residence.

As many as 51.0% of respondent mothers understand that sweetened condensed milk is a sugary drink added to milk, but is still given to toddlers. However, some respondents think that sweetened condensed milk is milk at 33.3%. Information about the definition of milk was most obtained by respondent mothers from television/radio/mass media in writing at 56.9%. As many as 25.2% of respondents have also received information that sweetened condensed milk should not be given to toddlers

from television/radio/mass media, and 23.58% from integrated services post cadres. In addition, the source of information related to sweetened condensed milk obtained by the respondent's mother came from health workers, health center officers, and fellow mothers under five.

Table 1. Family Demographic Characteristics

Parameter	n	%
Residency status		
Contract/lease	6	5,9
Family-owned homes	42	41,2
Self-owned house	54	52,9
Mother's age		
20 – 30 years old	39	38,2
31 – 40 years old	41	40,2
41 – 50 years old	21	20,6
>50 years old	1	1,0
Age Year of marriage		
0 – 5 years	12	11,8
6 – 10 years	22	21,6
10 – 15 years old	26	25,5
>15 years old	42	41,2
Mother's education		
Not Finished Elementary / MI	2	2,0
Finishing Elementary School	18	17,6
Junior High School Graduation	37	36,3
High School Graduation	43	42,2
Mother's work		
Not Working / Housewives	68	66,7
Self employed	8	7,8
Laborers	8	7,8
Private Employees / Civil Servants	13	12,7
Others	5	4,9
Father's education		
Not Finished Elementary	2	2,0
Graduating from Elementary School	10	9,8
Graduating from Junior High School	40	39,2
Graduating from Senior High School	40	39,2
Graduating College	9	8,8
Father's work		
Not Working / Housewives	1	1,0
Self employed	22	21,6
Laborer	29	28,4
Private Employees / Civil Servants	23	22,5
Other	26	25,5
Family income		
< Regional Minimum Wage (< Rp. 3,454,827)	55	53,9
≥ Regional Minimum Wage (> Rp. 3,454,827)	47	46,1
Tribes		
Javanese	101	99,0
Sundanese	1	1,0
Number of family members		
2 – 4 people	39	38,2
5 – 6 people	57	55,9
>6 people	6	5,9

Parameter	n	%
Gender		
Men	47	46,1
Woman	55	53,9
Child age category		
Baby (6 months- 2 years)	33	32,4
Toddler (> 2 years)	69	67,6
Immunization		
Never	1	1,0
Incomplete	30	29,4
Complete	71	69,6
History of Early Breastfeeding Initiation		
Yes	86	84,3
No	16	15,7
Age of Complementary Feeding		
Inaccurate (<6 months or >6 months)	35	34,3
Precise (6 months)	67	65,7
History of Infection in the Last 3 Months		
Ya		
a. Diarrhea	31	28,44
b. Acute Respiratory Tract Infections	14	12,84
c. Pneumonia	5	4,59
d. Tuberculosis	3	2,75
No infection	56	51,38
Growth monitoring		
Never	3	2,9
Yes, done	99	97,1
Nutritional status (BB/TB)		
Severe Malnutrition	7	6,9
Under Nutrition	13	12,7
Normal	72	70,6
At risk of overnutrition	5	4,9
Overweight	4	3,9
Obesity	1	1,0

Table 2. Description and Source Information of Sweetened Condensed Giving/ Sweet Condensed Creamer

Parameter	n	%
The form of Sweetened Condensed Milk given to toddlers		
Sachet/ 1 disposable pack	78	76,5
Tin	12	11,8
Pouch	12	11,8
Early Age of Sweetened Condensed Consumption		
< 6 months	7	6,9
6 – 12 months	22	21,6
>12 months	42	41,2
>24 months	31	30,4
The amount of Sweetened Condensed Milk consumed per day		
1 time	30	29,4
2 times	30	29,4
3 times	20	19,6
>3 times	22	21,6

Parameter	n	%
Definition of sweetened condensed/sweetened creamer according to the mother		
Milk	34	33,3
Water with milk flavor (Non-Milk)	16	15,7
Sugar drinks added with milk	52	51,0
Sources of information related to the definition of milk		
Television/ radio/mass media	24	53,33
Health workers	1	2,22
Health center staff	1	2,22
Integrated Services Post cadres	1	2,22
Others	3	6,67
Aisyiyah Cadre	0	0
Public Figures	1	2,22
Family	7	15,56
Peers	3	6,67
Sales product	4	8,89
The form of information obtained related to sweetened condensed / sweetened condensed creamer		
Oral	44	43,1
Written	58	56,9
Information related to sweetened condensed milk should not be given to toddlers.		
Television/ radio/mass media		
Health workers	31	25,20
Health center staff	13	10,57
Integrated Services Post cadres	14	11,38
Other	29	23,58
Aisyiyah Cadre	15	12,20
Public Figures	0	0,00
Family	6	4,88
Peers	3	2,44
Sales product	12	9,76
	0	0,00

Table 3. The Relationship between Mothers' Education and the Frequency of Consumption of Sweetened Condensed Milk in Toddlers

The Variables	Frequency of Sweetened Condensed Milk Consumption per Day						p-value	OR
	< 3 times/day		≥ 3 times/ day		Total			
	n	%	n	%	n	%		
Mother's Education								
Primary education	28	46,7	29	69,0	57	55,9		
Higher education	32	53,3	13	31,0	45	44,1	0,028*[a]	0,392
Total	60	100	42	100	102	100		
Number of Family Members								
2 – 4 people	25	41,7	14	33,3	39	38,2	0,586[b]	0,055
5 – 6 people	31	51,7	26	61,9	57	55,9		
>6 people	4	6,6	2	4,8	6	5,9		
Total	60	100	42	100	102	100		

Remarks: * significant if p-value < 0.05; Chi Square test

[a] Chi-Square test

[b] Spearman Rank Test

Based on Table 3. explained that the level of mother's education is related to the frequency of consumption of sweetened condensed milk per day (P-value: 0.028). As many as 69.0% of mothers with low education (did not graduate from elementary school, graduated from elementary school, and graduated from junior high school) give sweetened condensed milk to toddlers more than 3 times per day. Meanwhile, mothers with higher education (graduated from high school and college) provide sweetened condensed milk more than 3 times per day, as much as 31.0%. Therefore, mothers with higher education have a 0.392 times higher chance or 2.5 times lower chance of giving their children sweetened condensed milk more than 3 times per day compared to mothers with low education. Although the level of education is related to the selection of milk for children, the level of sweetened condensed milk in this study is still high. This is because sweetened condensed milk is relatively cheaper in Indonesia than other types of milk.

Table 3 also shows that families of 5-6 people are the group that gives the most sweeteners to children more than 3 times per day, which is 61.9%. In addition, only 4.8% of respondents with a family of more than six people gave their children sweeteners more than three times per day. Based on the results of the statistical test, it is known that the number of family members does not have a significant relationship with the frequency of consumption of sweetened condensed food in children (p-value: 0.586; r: 0.055).

Table 4. The Relationship between the Frequency of Consumption of Sweetened Condensed Milk and Health Impacts on Children

Frequency of Sweetened Condensed Consumption per Day	**Health Impact**						**p-value**
	No		**Ada**		**Total**		
	n	**%**	**n**	**%**	**N**	**%**	
Less than 3 times/day	28	62,2	32	56,1	60	58,8	
More than 3 times/day	17	37,8	25	43,9	42	41,2	0,535
Total	45	100	57	100	102	100	

Notes: Using Chi-Square test

Based on Table 4, as many as 43.9% of toddlers who consume sweetened condensed rice more than three times daily experience health impacts. Meanwhile, health impacts are also experienced by toddlers who consume sweetened condensed milk less than three times per day, which is as much as 56.1% of toddlers. The analysis results showed no significant relationship between the frequency of consumption of sweetened condensed food per day and the health impact on toddlers (p-value = 0.535). From the results of interviews with mothers of toddlers, it is known that 57 toddlers experience health impacts due to the consumption of sweetened condensed milk. The most common health impact experienced by toddlers due to the consumption of sweetened condensed rice is dental caries (34 toddlers). Meanwhile, other health impacts experienced by toddlers are diarrhea, cavities, and itching.

Consuming dairy products in children can help reduce the risk of malnutrition problems. Milk and its processed products are nutrient-dense foods that contain energy, protein, and essential micronutrients such as calcium, magnesium, zinc, potassium, and phosphorus, which are crucial for supporting the growth and development of children (Mikulic et al., 2025). The types of milk that children in Indonesia widely consume are formula milk, cow's milk, and sweetened condensed milk. Interestingly, sweetened condensed milk is recorded as the second most consumed type of milk by children, especially in rural areas and communities with low socioeconomic status (Sunardi et al., 2023).

Research conducted in two sub-districts in Semarang City, Sekaran and Bandarharjo, shows that 65.7% of children under five have obtained complementary feeding on time. However, 28.5% of children under 12 months old were given thick sweets when complementary food was introduced. Additionally, as many as 41.2% of toddlers began receiving sweetened condensed milk at more than 12 months. This is not in accordance with the recommendations

for early childhood nutrition based on the Food and Drug Supervisory Agency of the Republic of Indonesia. This agency has appealed that sweetened condensed milk cannot replace breast milk and should not be consumed by babies under 12 months old (Deputi Bidang Pengawasan Pangan Olahan,2021). This recommendation is inversely proportional to the condition in the community, where it is still found that many families give their children milk products in the form of sweetened condensed milk instead of formula milk for children under five years old, or give it together with breast milk for babies up to the age of 12 months. A survey conducted by Juffrie et al. (2020) In Jakarta, it was found that 22.1% of children aged 12 – 38 months were given sweetened condensed milk. In addition, as many as 30% of preschool children (3-5 years old) in Yogyakarta are given sweetened condensed milk to maintain milk consumption habits, even used as a substitute for formula milk. Research conducted by Yudistira et al. (2022) stated that as many as 11.4% of toddlers in Banten, 8.4% in DKI Jakarta, and 5.3% in the Special Region of Yogyakarta consumed sweetened condensed. Additionally, 78.3% of respondents in Banten, 88.1% in Jakarta, and 95.2% in Yogyakarta gave their toddlers more than one sachet of sweetened condensed milk per day (Stunting Reduction Acceleration Team, 2023).

In this study, although the history of early breastfeeding, immunization, and the timeliness of providing breastfeeding assistance was good (65.7%), there were indications of feeding errors, including the use of sweetened condensed milk after that period. The inaccuracy of giving complementary feeding to infants can be influenced by internal (gender, personality, intelligence) and external (educational, religious, cultural, environmental, and socio-economic) factors that go through the stages of knowledge, attitudes, and practices (Irwan, 2017). The factor contributing to the selection of the type of complementary feeding in this study is socio-economic factors, where one of the main reasons for giving sweetened condensed milk is its low price. A survey conducted by Bisoi et al. (2019) in India indicates that low-income families tend to prefer cheaper commercial food or beverages, allocating approximately 22.3% of their total income to these purchases. Although often in contact with health workers, this opportunity is rarely used to consult on providing good complementary feeding.

Sweetened condensed milk is a complementary product to foods and beverages high in sugar. The main ingredient in sweetened condensed milk is sucrose, also known as glucose, so the sugar content in sweetened condensed milk can be more than 50%. Meanwhile, the protein content in sweetened condensed milk is no more than 6.5%. This causes thick sweetness that is not intended for a single milk drink but as a topping, complement, or mixture in food or beverages 2,4. As many as 51.0% of mothers in this study have understood that sweetened condensed milk is a sugar drink added to milk and should not be given to children. However, in practice, mothers still give sweetened condensed milk to their children. Given milk's role in supporting early childhood growth, some caregivers ensure milk consumption through whatever milk sources are accessible. A survey conducted in Jakarta indicated that 22.1% of children aged 12–38 months received sweetened condensed milk in addition to breast milk (Juffrie et al., 2020a). The practice of giving sweetened condensed milk to children is associated with the mother's education level (p-value = 0.028). As many as 69.0% of mothers with low education give sweetened condensed milk to toddlers more than 3 times daily. Meanwhile, at a high maternal education level, 31.0% of mothers give their children sweetened drinks more than 3 times daily. The level of education affects milk consumption, as higher education influences consumption choices of healthy foods and beverages, such as providing their children with nutrient-dense foods, including milk. Therefore, the higher a person's education, the greater their awareness of the benefits of drinking milk. It is also said that the higher her education, the more aware he is of his toddlers' need to give baby milk rather than sweetened condensed milk to replace breastmilk (Palupi; Bably et al., 2021).

Although the level of education is related to the selection of milk for children, the level

of sweetened condensed milk in this study is still high. This is because sweetened condensed milk is relatively cheaper in Indonesia than other types of milk. The most common form of packaging provided is disposable sachets (76.5%), which are practical, easily accessible around the respondents' residences, and inexpensive. Economic factors affect the practice of giving sweetened condensed milk to children (Juffrie et al., 2020;Guo et al., 2021). This is supported by the reasons stated by the mother in the interview results related to the provision of sweetened condensed milk, namely its low price (23.7%), which makes it more accessible compared to other dairy products. This finding aligns with a study in Batam (2022), which showed that 14.6% of mothers gave sweetened condensed milk to their children due to the product's affordability. Many children who consume sweetened condensed rice come from families with low socioeconomic status (53.9%) (Yudistira et al., 2022).

As many as 41.2% of toddlers in this study consumed three or more servings of sweetened condensed milk daily. The high frequency of consumption of sweetened condensed milk in children also contributes to increased intake of added sugars in the daily diet. Excessive added sugar intake in children can have various negative impacts, including an increased tendency to consume sugary drinks, a decreased acceptance of whole, nutritious food, and the emergence of health problems such as dental caries and diarrhea (Aila et al., 2023; Marlindayanti, 2024). In the long term, these consumption patterns are also at risk of causing malnutrition in children, such as stunting, as well as various diseases related to metabolic disorders, such as obesity, type 2 diabetes, and cardiovascular disorders.

According to the results of this study, 43.9% of toddlers experience health impacts due to consuming sweetened condensed milk more than three times per day. The health impacts experienced by respondents under five in this study included dental caries, cavities, diarrhea, and itching. Dental caries is at risk of appearing in toddlers who consume sweetened condensed milk excessively because the sugar content in sweetened condensed milk is very high. The high sugar content in sweetened condensed milk can lower the saliva's pH and demineralize the teeth's surface. The continuous demineralization due to high-frequency consumption of sweetened condensed milk can cause tooth enamel to become weak, brittle, and susceptible to further damage, such as caries and cavities (Marlindayanti, 2024;Bravi et al., 2021).

CONCLUSION

A substantial proportion of toddlers were frequently exposed to sweetened condensed milk, with 35.8% consuming it for at least twelve months and 41.2% ingesting it three or more times per day. High consumption frequency was significantly associated with lower maternal educational attainment ($p = 0.028$). Notably, although more than half of mothers recognized sweetened condensed milk as a sugar-rich product with added milk content, it continued to be provided to toddlers. These findings highlight a critical disconnect between maternal knowledge and feeding practices, underscoring the need for targeted nutrition education and behavior-focused interventions to reduce inappropriate sweetened condensed milk consumption among young children.

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