

CONSUMER ACCEPTANCE AND PERCEPTION OF NUGGET PRODUCT AS A NUTRITION EDUCATION MEDIUM INTRODUCED THROUGH FOOD FESTIVAL

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ABSTRACT

Background: Innovative approaches are needed to improve public nutrition awareness, particularly among children and families. Utilizing familiar food products as educational media in informal settings can enhance engagement and nutrition concepts understanding. **Objective:** This study aimed to evaluate consumer acceptance and perception of a nugget product introduced as a nutrition education medium during a food festival. **Methods:** The study employed a mixed-methods approach involving 22 participants. Consumer acceptance was assessed using a five-point hedonic scale evaluating visual appearance, taste, suitability with the nutrition concept, and clarity of nutrition explanation. Consumer perceptions were explored through open-ended questions addressing understanding of nutrition, perception of nutritious food, emotional responses, and suggestions for improvement. Data were analyzed descriptively and presented in quantitative and qualitative summaries. **Results:** The nugget product received high acceptance across all evaluated attributes, with mean scores exceeding 4.0 on a five-point scale. Taste showed the highest acceptance score, followed by clarity of nutrition explanation and suitability with the nutrition concept. Qualitative findings indicated that consumers associated nutrition with growth, health, and energy, and perceived the nugget as a nutritious food primarily due to its protein content. Positive emotional responses such as happiness and satisfaction were commonly reported, and children and families were identified as the most suitable target groups. **Conclusion:** The results suggest that nugget products can function effectively as nutrition education media when introduced through community-based events such as food festivals. Integrating sensory appeal with clear nutrition messaging may enhance consumer engagement and support nutrition education efforts in informal settings.

1. Introduction

Adequate nutrition during childhood plays a crucial role in supporting growth, cognitive development, and long-term health outcomes (Aboyo, 2024; Pinto, 2023). However, various challenges remain in ensuring balanced dietary intake among children, including limited food preferences, selective eating behavior, and low awareness of nutritional value (Hodge, 2019; Kupka et al., 2020). Food-based approaches that combine nutritional quality with attractive sensory characteristics are therefore essential to improve children's acceptance of nutritious foods (Appleton et al., 2021).

Processed food products designed for children have the potential to function not only as sources of nutrients but also as media for nutrition education. Among various processed foods, nuggets are widely favored due to their familiar taste, practical preparation, and appealing texture (Barros & Trindade, 2023). The development of innovative nugget products enriched with nutritional messages may support efforts to introduce healthier food choices while maintaining consumer acceptance (Mahmudah et al., 2025; Bonfim et al., 2020; El-Anany et al., 2020). Nevertheless, the success of such products strongly depends on consumer perception, particularly related to appearance, taste, and overall liking.

Consumer acceptance studies are an important component in the development and dissemination of food innovations (Upraiti, 2024). Positive sensory perception and acceptance increase the likelihood of repeated consumption and purchasing intention (Spill et al., 2019), especially when the target consumers are children and their caregivers. In addition, understanding public perception toward nutrition-oriented food products can provide valuable insights for improving product formulation, communication strategies, and educational impact.

The food festival (exhibition) activities serve as an effective platform for introducing food innovations directly to the public (Kwiatkowski et al., 2024). Through direct interaction, consumers are able to observe, taste, and evaluate products while receiving nutritional information simultaneously to evaluate the product (Lee, 2025). However, documentation and evaluation of consumer responses toward food products introduced in such settings are still limited, particularly in the context of nutrition education for children.

Therefore, this study aims to describe consumer acceptance and perception of nugget with "Power Kids" brand introduced through an exhibition activity as a nutrition education medium for children. The findings of this study are expected to provide preliminary insights into public responses toward nutrition-oriented food innovations and support further development of child-friendly nutritious products.

2. Materials and methods

2.1. Biomaterials

The main biomaterials used in the production of nugget product consisted of chicken meat, chicken liver, cheese, potatoes, carrots, and egg yolk. Fresh chicken meat and chicken liver were selected as the primary sources of animal protein, while vegetables such as potatoes and carrots were incorporated to enhance nutritional value and improve product acceptability for children. Cheese and egg yolk were added to improve flavor, texture, and overall palatability of the product.

All food ingredients were obtained from local markets in Kediri, East Java, Indonesia and were suitable for food consumption. No synthetic preservatives, artificial coloring agents, or hazardous chemicals were added during product preparation. The materials used in this study were intended to represent a child-friendly nugget formulation focusing on nutritional quality and safety.

2.2. Preparation of sample

Nugget samples were prepared using fresh food-grade ingredients consisting of 250 g chicken meat, 200 g chicken liver, 25 g egg yolk, 50 g carrots, 250 g steamed potatoes, one stalk of leek, 50 g bread crumbs, 50 g wheat flour, and 26 g cheese. All ingredients were processed under hygienic conditions prior to product formulation.

Particularly, chicken liver were washed thoroughly under running water, drained, and steamed at approximately 90°C for 20 minutes to ensure proper cooking while maintaining nutritional quality. The cooked materials were allowed to cool at room temperature and subsequently minced using a food processor until a uniform texture was obtained.

Carrots and potatoes were peeled, washed, and until soft, then mashed to form a smooth puree. Leek was finely chopped and incorporated as a flavor enhancer. The minced chicken meat and liver were mixed with mashed vegetables, grated cheese, egg yolk, wheat flour, and seasonings until a homogeneous dough was formed.

The nugget mixture was shaped into uniform portions suitable for children's consumption and steamed to allow structural binding of the product matrix. After cooling, the nuggets were coated evenly with breadcrumbs and fried at 160°C for 3 minutes until a golden-brown surface was achieved. The prepared nuggets given "Power Kids" name were then served for consumer acceptance and perception evaluation during the food exhibition activity.

2.3 Quality assessment

Product quality evaluation in this study was conducted through consumer acceptance and perception assessment using a structured questionnaire. The questionnaire was designed to capture respondents' demographic characteristics, sensory acceptance, and perception of Nugget Power Kids as a nutrition education product.

A total of 22 panelists participated voluntarily in this study during the expo activity. The respondents consisted of individuals with various occupational backgrounds, including lecturers, employees, and students, representing adult consumers who potentially play a role as food decision-makers for children.

Sensory acceptance attributes evaluated in the questionnaire included product appearance, taste, overall liking, and conformity with the nutrition concept presented. These attributes were measured using a

five-point Likert scale, where a score of 1 indicated very negative perception and a score of 5 indicated very positive perception.

Consumer perception related to nutritional knowledge and educational aspects was assessed through several open-ended questions. These questions explored respondents' understanding of nutrition and balanced diets, perception of nutrient-rich foods, suitability of nugget as a nutritious food option, target consumers, perceived benefits, and overall impressions after consuming the product. In addition, respondents were asked to provide suggestions regarding product improvement and future expo activities.

Data obtained from the questionnaire were analyzed descriptively. Quantitative data from Likert-scale questions were summarized using frequencies, percentages, and mean scores, while qualitative responses from open-ended questions were grouped and interpreted thematically to support the discussion of consumer perception results.

3. Results and discussions

3.1. Consumer acceptance of nugget product

The evaluation of consumer acceptance revealed consistently high levels of approval for the nugget product introduced during the food festival (**Table 1**). Among the sensory attributes, taste acceptance yielded the highest mean score (4.59 ± 0.67), followed by clarity of nutrition explanation (4.50 ± 0.80), suitability with the nutrition concept (4.45 ± 0.74), and visual appearance (4.41 ± 0.67). These results

indicate an overall favorable sensory impression of the product, suggesting that the product's organoleptic properties were well received by participants.

High sensory acceptance is an important determinant of consumer choice (Byrne, 2021). For instance, taste and texture have repeatedly been shown to be key predictors of liking and repeat purchase intentions in novel food products (Nguyen & Varela, 2023), and these sensory attributes often outweigh informational cues unless they are well integrated with sensory experience. In interventions that combined sensory exposure with nutrition education, favorable taste perception was also significantly associated with increased willingness to adopt promoted dietary behaviors (Papantoni et al., 2021).

In this study, the strong consumer response toward taste and appearance aligns with findings from previous research on functional or modified food products, where products with pleasant sensory attributes demonstrate higher acceptance levels among consumers (Mustapa et al., 2024). A systematic review on consumer preferences for nutrition-modified foods reported that health-enhanced products with sensory qualities aligned to consumer expectations achieved higher acceptance, especially when the product's health benefit was easily understood (Bimbo et al., 2017).

This supports the present finding that combining sensory appeal with nutrition messaging (e.g., protein content, balanced nutrition) can effectively engage consumers (Ruxton et al., 2023; Sanjeet & Mishra, 2024).

Table 1. Consumer acceptance scores of nugget product introduced at food festival

Attribute Evaluated	Mean Score	Minimum	Maximum
Visual appearance of the nugget	4.41 ± 0.67	3	5
Taste acceptance	4.59 ± 0.67	3	5
Suitability with nutrition concept	4.45 ± 0.74	3	5
Clarity of nutrition explanation	4.50 ± 0.80	3	5

Table 2. Summary of consumer perceptions toward nugget product as nutrition education medium

Aspect	Dominant Consumer Responses
Understanding of nutrition	Nutrition is essential for body growth, health, and energy
Perception of nutritious food	Food containing protein, vitamins, and balanced nutrients
Nugget as nutritious food	Considered nutritious due to protein content
Main benefit of consumption	Supporting growth, health, and daily energy
Suitable consumer group	Children, families, and general public
Emotional response during consumption	Happy, satisfied, interested
Suggestions for improvement	Better booth setup, wider promotion, targeting schools/posyandu

3.2. Consumer perceptions toward nugget as a nutrition education medium

Qualitative responses revealed that most participants associated nutrition with body health, growth, and energy provision (**Table 2**). Nutritious food was commonly defined as food containing balanced nutrients, particularly protein and vitamins. The majority of consumers perceived the nugget product as a nutritious food, mainly due to its protein content and suitability for children.

Participants identified children and families as the primary target consumers, aligning with the educational purpose of the product (**Table 2**). Emotional responses during consumption were predominantly positive, including feelings of happiness, satisfaction, and interest. Suggestions for improvement mainly focused on enhancing booth presentation, expanding promotional strategies, and targeting community health centers or schools for future activities.

These perceptions align with the primary aim of the food festival intervention: using an enjoyable food format to communicate nutrition concepts. Research shows that integrating nutrition education into sensory experiences can enhance comprehension and retention of nutrition messages (Moore et al., 2020), as participants directly engage with food that exemplifies the educational content.

The method used a hedonic evaluation with Likert scales that is widely recognized in sensory and consumer research as an effective tool to gauge product liking and acceptance (Addo-Preko et al., 2023). Hedonic scales provide a validated measure of consumer pleasure response and have been frequently applied in studies assessing novel or modified foods (Gamis et al., 2022). In this context, the consistently high ratings (means >4.0 across all attributes) (**Table 1**) indicate that both the sensory quality and nutrition communication strategy (**Table 2**) were in line.

Research on consumer acceptance of alternative food products, such as plant-based nuggets and other functional foods, demonstrates that sensory attractiveness combined with clear communication of health benefits significantly improves acceptance and positive perceptions (Roose & Mulier, 2020; Wongthahan et al., 2025). Additionally, consumer investigations on spent layered chicken-based nugget products have shown that overall acceptance is

strongly influenced by sensory attributes such as appearance, aroma, and taste, with preferred formulations yielding the highest acceptance scores (Mahmudah et al., 2025).

This study also highlights the potential of food festival formats as informal but effective nutrition education platforms. Unlike traditional classroom or counseling settings, food festivals provide a contextual learning environment where consumers interact with food products directly, often leading to positive emotional responses such as happiness, satisfaction, and curiosity. Such emotional engagement is a recognized factor in food choice behavior (Ha & Lim, 2023; Ljubičić et al., 2023), products associated with positive emotions are more likely to be accepted and remembered.

However, while the overall acceptance level is high, qualitative feedback suggests opportunities for optimization. Consumers recommended improvements in booth presentation and broader promotion strategies, especially to target younger audiences such as school children or caregivers attending community health posts. Such enhancements align with findings from nutrition education research, which emphasizes the importance of contextual visibility and accessibility of educational food products for maximizing impact (Moore et al., 2020). These outcomes support the potential use of similar strategies in future public health nutrition interventions that aim to improve dietary behavior through enjoyable food experiences.

4. Conclusions

This study demonstrates that the nugget product introduced during a food festival achieved high consumer acceptance and generated positive perceptions as a nutrition education medium. Sensory attributes, particularly taste and visual appearance, played a significant role in attracting consumers, while the clarity and suitability of the nutrition message supported effective knowledge transfer.

Consumers were able to associate the product with fundamental nutrition concepts such as growth, health, and energy, indicating that the educational objectives were successfully conveyed. The perception of the nugget as a nutritious food, mainly due to its protein content, suggests a potential shift in the conventional image of nugget products from indulgent foods toward educational and functional food

options. Positive emotional responses during consumption further reinforced consumer engagement, which is a key element in experiential nutrition education. Overall, the findings highlight the potential of combining sensory-appealing food products with nutrition education messages within informal community settings such as food festivals. This approach may serve as an effective strategy to enhance nutrition awareness, particularly among children and families. Future studies are recommended to involve larger and more diverse participant groups and to evaluate the long-term impact of such interventions on nutrition knowledge and dietary behavior.

5. References

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