JOURNAL OF CONSUMER SCIENCES

CONSUMER BEHAVIOR | RESEARCH ARTICLE

Article history:
Received
August 15, 2024

Revision submit
September 06, 2024
November 05, 2024
November 27, 2024

Accepted
November 29, 2024

Available online
November 30, 2024

Author Affiliation:
[1]Department of Community Nutrition, Faculty of Human Ecology, IPB University, Jl. Babakan, Dramaga, Bogor, West Java 16680, Indonesia

[2]Department of Nutrition, STIKes Bogor Husada; Jl. Shaleh Iskandar No.4, Kedung badak, Tanah Sereal, Bogor, 16164 Indonesia

[3]Department of Nutrition, Universitas Negeri Semarang, Jl. Kelud Utara III No.15, Gajahmungkur, Semarang, Central Java, 50237, Indonesia

[4]Global Alliance for Improved Nutrition; Jl. HR Rasuna Said, Kav. 6 Blok X-2, South Jakarta, Indonesia

[5]Directorate General of Disease Prevention and Control, Ministry of Health of Indonesia; Jl. HR Rasuna Said, Kav 4-9. Blok X-5, South Jakarta, Indonesia

*Corresponding author:
rimbawan@apps.ipb.ac.id

Nutrition Information and Health Message on Sugar, Salt, and Fat Content on Ready-to-Serve Food Products in Indonesia: An Examination of Consumer and Producer Perspectives

Zuraidah Nasution[1], Rimbawan Rimbawan[1*)], Deannisa Fajriaty[2], Syifa Qolbiyah Nasir[3], Aang Sutrisna[4], Eny Kurnia Sari[4], Eva Susanti[5]

Abstract: The popularity of ready-to-serve foods has increased in Indonesia, particularly among busy consumers with limited time for cooking at home. However, the consumption of ready-to-serve foods high in sugar, salt, and fat (SSF) has prompted concerns regarding their potential adverse health impacts when consumed excessively. The present study aimed to investigate consumers' behavior and perception regarding the purchase of ready-to-serve foods and the practice of food producers in providing these products. The study employed a structured questionnaire involving 100 consumers selected based on purposive sampling. Additionally, focus group discussions were conducted with 80 ready-to-serve food producers across five Indonesian cities using a cross-sectional research design. The data analysis, conducted using binary logistics, yielded significant findings regarding the relationship between consumers' income and their purchase decisions regarding ready-to-serve food. This study revealed that price, taste, and accessibility were the primary factors influencing consumers' food choices. However, it also indicated that nutrition and health aspects received inadequate attention from consumers, which is a cause for concern. Concurrently, the producers who participated in this study indicated that they prioritize sanitation and hygiene in their food production, citing regulatory requirements as the primary driver of this practice. It is regrettable that the majority of the producers lacked information regarding the nutrition content of their products. Moreover, they did not actively contribute to controlling SSF levels except to respond to consumers' demands. These findings underscore the necessity for enhanced awareness campaigns and implementation strategies involving all stakeholders to promote healthier, ready-to-serve foods.

Keywords: consumer behavior, fast food, food label, health message, SSF

JEL Classification: D12, L66, I12, I18

Rimbawan

ABOUT THE AUTHORS

Zuraidah Nasution is lecturer at the Department of Community Nutrition, Faculty of Human Ecology, IPB University. Her research interests include the development of new food products and functional foods, nutrient analysis, and nutrient profiling of foods. She can be contacted via email at zuraidah.nasution@apps.ipb.ac.id.

Rimbawan, a Professor of Nutrition Biochemistry at IPB University. His focus areas include nutrition metabolism, food nutrition evaluation, functional foods, foods for special dietary use and medical purposes, school and workplace nutrition program development, and food, nutrition & health policy/regulation. He can be reached via rimbawan@ipb.ac.id.

Deannisa Fajriaty has completed a master's degree at the Department of Community Nutrition, Faculty of Human Ecology, IPB University, Bogor. She is a lecturer at the Department of Nutrition at STIKes Bogor Husada. She can be reached via deannisa@sbh.ac.id

Syifa Qolbiyah Nasir is a lecturer at the Department of Nutrition at Universitas Negeri Semarang. She can be reached via syifaqn@mail.unnes.ac.id.

Aang Sutrisna, a public health expert with a considerable experience, is the Senior Policy Advisor at the Global Alliance for Improved Nutrition (GAIN) in Indonesia. He has extensive experience in enhancing nutrition outcomes and promoting food sustainability. He can be reached via asutrisna@gainhealth.org.

Eny Kurnia Sari serves as a project coordinator for the Global Alliance for Improved Nutrition for Youth and Food System and Social Protection. She has experience in both rural and urban development programs in local and international NGOs, with a background in health and nutrition. She can be reached via eksari@gainhealth.org.

Eva Susanti is the Director of Prevention and Control of Non-Communicable Diseases at the Ministry of Health. Her research interests are centered on public health and prevention practices related to non-communicable diseases. She can be reached via evasarenta2@gmail.com

PUBLIC INTEREST STATEMENT

The Regulation of the Minister of Health of the Republic of Indonesia No. 30 of 2013 has established the recommended daily intake levels for sugar, salt, and fat. These levels are as follows: <50 grams of sugar per day, <2000 milligrams of salt per day, and <67 grams of fat per day. It should be noted that these levels apply to foods that have been processed and are ready-to-serve. Furthermore, the regulation mandates the labeling of sugar, salt, and fat (SSF) content information and health messages regarding SSF intakes on processed and ready-to-serve food products.

Despite the elapse of 11 years since the issuance of this regulation, doubts persist regarding its effective implementation. A substantial number of studies have been conducted on the labeling of nutrition information, including that pertaining to SSF, in processed food products. However, these studies have focused primarily on ready-to-serve food products. The number of specific studies examining the labeling of health messages regarding SSF intakes remains limited. It is therefore of interest to study the labeling of health messages regarding SSF intakes, especially on ready-to-serve food products, since this has not been a common practice in any country. This study focused on the perspective of consumers and producers regarding the labeling of SSF on their ready-to-serve food products.

JOURNAL OF CONSUMER SCIENCES

1. Introduction

The prevalence of non-communicable diseases, including diabetes and cardiovascular diseases, has increased globally, including in Indonesia. As reported by the Institute for Health Metrics and Evaluation, Indonesia's leading causes of death from 2011 to 2021 have undergone a notable shift (Institute for Health Metrics and Evaluation, 2024). The top five causes of death in the country over the past decade have been stroke, ischemic heart disease, liver cirrhosis, chronic obstructive pulmonary disease (COPD), and diabetes. All of these conditions are classified as non-communicable diseases. In 2024, the Ministry of Health of the Republic of Indonesia posited that an excessive intake of sugar, salt, and fat might be a significant contributing factor to the alarming rise in non-communicable diseases, including obesity, type 2 diabetes, stroke, coronary heart disease, and kidney failure (Ministry of Health, 2024). Under the provisions set forth by Regulation of the Minister of Health of the Republic of Indonesia No. 30 of 2013, the recommended daily intake of sugar, salt, and fat daily is to be limited to less than 50 grams of sugar, less than 2000 milligrams of salt, and less than 67 grams of fat. These allowances are derived exclusively from processed and ready-to-eat foods. Regrettably, Indonesia's 2014 Individual Food Consumption Survey (SKMI) revealed that 29.7% of the population exceeded the recommended daily intake levels (Atmarita et al., 2016).

In 2021, the United Nations Children's Emergency Fund (UNICEF) reported that a single policy is an adequate approach to addressing the complex issues of obesity and non-communicable diseases (NCDs) related to dietary habits (UNICEF, 2021). The World Health Organization (WHO) has put forth a number of recommendations to address unhealthy eating habits. These include consumer education, limiting the marketing of foods high in sugar, salt, and fat, ensuring proper food labeling, implementing tax policies on high-risk foods, reformulating food products and their serving sizes, and limiting the marketing of foods high in sugar, salt, and fat at institutions such as schools (WHO, 2022).

In Indonesia, all food products, including processed foods and ready-to-serve foods, are required to display nutrition facts on their packaging (Ministry of Health of the Republic of Indonesia, 2013). These facts must include information about the sugar, salt, and fat contents of the product. Additionally, the packaging must display a message or warning regarding the maximum daily intake limit for sugar, salt, and fat per person. This is intended to help consumers make an informed purchasing decisions. However, it should be noted that the currently available guidelines do not fully cover the group of ready-to-serve foods. The Indonesian Food and Drug Authority (BPOM) has assumed the responsibility of regulating the processed food group rather than the Ministry of Health. This is evidenced by the Authority's issuances of Regulations No. 20 (FDA Indonesia, 2021), No. 26 (FDA Indonesia, 2021), No. 1 (FDA Indonesia, 2022), and No. HK. 02.02.1.2.12.21.494 (FDA Indonesia, 2021). Concurrently, the marketing of ready-to-serve foods in Indonesia has proliferated exponentially over the past few decades, coinciding with the advent of an increasingly hectic lifestyle. This has led to a growing preference for instant food options that offer convenience, speed, and practicality in everyday meal preparation. The results of the Katadata Insight Center (KIC) survey, conducted in January 2023, indicated women are more likely than men to consume fast food with high frequency, with 57.1% of women reporting consumption six to seven times per week, compared to 42.9% of men (Databoks, 2023). Furthermore, the survey revealed that 50% of respondents, comprising both women and men, consume fast food more than seven times a week. The most commonly consumed fast-food items among Indonesian

JOURNAL OF CONSUMER SCIENCES

individuals in the last three months were fried chicken (79%), potato fries (56%), and burgers (42.9%) (Databoks, 2023).

It is of the utmost importance to raise consumer awareness of their dietary habits in order to facilitate a change in consumer behavior and promote healthier eating habits. It is recommended that food producers provide nutrition information and health messages on their products to assist consumers in making informed choices about their food. However, the absence of mandatory requirements and guidelines for the producers of ready-to-serve foods may impede this objective. The existing literature on this topic in Indonesia is still limited. This study therefore aimed to investigate and provide new information on consumers' and food producers' perspectives on the provision of information on the SSF content information of ready-to-serve foods and the inclusion of health messages on these products in Indonesia. It is hoped that this study will inform the development of policies on the provision of information on the sugar, salt, and fat content of processed and ready-to-serve foods, as well as the inclusion of health messages on these products.

2. Literature Review

2.1 Theory of Planned Behavior

The main component of this model is behavioral intention. Behavioral intention is influenced by attitudes regarding the probability of achieving the desired outcome and subjective evaluations of the potential risks and benefits associated with that outcome. The theory of planned behavior posits that behavioral achievement is contingent on two key factors: motivation (intention) and ability (behavioral control). The theory of planned behavior (TPB) identifies three distinct types of beliefs: behavioral, normative, and control (Lamorte, 2022). This theory is concerned with human behavior, including purchase decisions and decision-making processes that are influenced by subjective contexts. The theory is founded upon two essential elements: consumer attitudes and consumer behavior. Additionally, subjective norms are associated with the beliefs of individuals or groups who approve and support certain behaviors.

Calabro et al. (2023) demonstrated that the TPB can effectively reduce the consumption of sugary drinks. Specifically, an emphasis on modifying attitudes, norms, and habits, as well as enhancing perceived behavioral control of sugary drinks, may prove to be the most effective approach to reducing consumption behavior. The findings are corroborated by a meta-analysis conducted by Sogari et al. (2023), which revealed that TPB shows a generally positive attitude toward the implementation of a healthy diet. The model demonstrates that attitude, subjective norm, and control beliefs pertaining to behavioral intention in adopting a healthy diet are all significantly correlated with attitude towards traditional eating. Moreover, the results indicated that conventional eating exerts a positive and significant influence on the behavioral intention of adopting a healthy diet.

2.2 Relationship between Factors Influencing Food Purchase Intention and Food Label Perusal Behavior Among Consumers in Indonesia

In Indonesia, the factors influencing the intention to purchase food are often contingent on price, especially when each product is offered at a promotional menu. As Sutanto and Gunawan (2023) have demonstrated, price, promotion, and product quality all exert a positive and significant influence on consumers' purchasing decisions in Surabaya.

JOURNAL OF CONSUMER SCIENCES

Additionally, the meta-analysis study conducted by Saha et al. (2022) has demonstrated a number of factors that significantly influence fast food consumption, including taste, brand, accessibility, cleanliness, variety, promotion, and serving time.

As reported Mauludyani et al. (2022), these factors were also identified in their research on determine the relationship between knowledge about nutrition labels and purchase behavior for packaged food products among consumers in Indonesia. The findings indicate that the majority of consumers prioritize the product's price when making purchasing decisions. In the context of fast food, the low prices and large portions offered by fast-food restaurants also influence eating habits. The many discounts offered by fast-food restaurants increase consumer desire to purchase these foods. Additionally, consumers indicated a preference for nutrition facts to be listed on the label rather than price, expiration date, and halal logo. This preference may be attributed to the consideration that foods' nutrition and health benefits are essential for consumers.

Other factors that influence the intention to purchase ready-to-serve food include hygiene, the quality of raw materials, the handling method of the cooked food, sales methods, processing methods, halal guarantees, serving methods, food-grade cutlery, and the distribution of ingredients and products. In addition, the purchase of ready-to-serve food may also be influenced by food safety concerns, as evidenced by research conducted by Munasiroh et al. (2019) among students, which indicated that students are already aware of food safety issues related to ready-to-serve food.

As outlined by the Australian Government (2022), the objective of menu labeling in Australia and New Zealand is to facilitate consumer comprehension of the information presented and its application in making informed and healthier food purchase decisions at the point of sale. In Indonesia, the regulation of processed food labels is governed by the Indonesian Food and Drugs Authority Regulation No. 20 of 2021. The definition of a food label, as outlined in the regulation, is as follows: *"Processed Food Labels, henceforth referred to as 'Labels', are any information regarding Processed Food in the form of pictures, writing, a combination of both, or other forms included in Processed Food, included in, affixed to, or part of Food Packaging."* In addition to processed food, the Regulation of the Minister of Health of the Republic of Indonesia No. 30 of 2013 also regulates ready-to-serve food. This regulation states, *"Any individual or entity engaged in the production of ready-to-serve food containing sugar, salt, and fat is obliged to provide information regarding the content of these ingredients, as well as health messages through informational and promotional media."*

In Indonesia, there is a paucity of knowledge regarding food labeling, especially among adolescents residing in rural and urban areas, as documented by Hajjah and Retnaningsih (2024). As reported by Mauludyani et al. (2022), the vast majority of food consumers (96.0%) indicated that they made purchasing decisions based on the presence of nutrition labels, perceiving them as a quality indicator superior to that of products lacking such labels. In other countries, such as the United States, a significant proportion of the population is either unaware of or underestimates the calorie and nutrient content of food products. In order to facilitate the dissemination of nutrition information for these products to consumers in a direct, accessible, and consistent manner, Section 4205 of the Affordable Care Act mandates the provision of calorie and other nutrition information to consumers in restaurants (FDA United States, 2014). Empirical evidence from Australia and New Zealand indicates that the implementation of menu labeling policies can lead to a reduction in consumption of less

JOURNAL OF CONSUMER SCIENCES

healthy food options and an improvement in public health outcomes (Australian Government, 2022).

It is evident that consumers who are aware of the importance of health will make it a habit to read the information provided on the nutritional value of the products they consume. Mauludyani et al. (2022) demonstrated that individuals with better knowledge of nutrition labels are more likely to select products bearing such labels than those without. Subsequently, based on their perception, they can select products that are perceived to be healthier than similar products. Similarly, Rai et al. (2023) stated that consumer perception comprises sensory properties and personal and environmental factors. Sensory and personal factors include consumer age, attitude, health condition, nutrition awareness, and religion, which directly influence consumer choices. In light of the aforementioned elaborations, the first hypothesis (H1) was formulated as follows:

H1: Consumers' knowledge, attitudes, and practices significantly affect their awareness of nutrition and influence their purchase intentions of ready-to-serve foods.

2.3 Relationship between Producers and Ready-To-Serve Food Regulations in Indonesia

The policy regarding the provision of information on the SSF contents of processed foods has been implemented in Indonesia; however, a similar situation has not been observed with ready-to-serve foods. The provision of calorie information on processed food menus in restaurants and catering services has been implemented in several countries, including the USA (FDA United States, 2014), England (UK Government, 2021), and Australia and New Zealand (Australian Government, 2022). These policies represent an effort to support the limitation of SSF intake, with the ultimate goal of reducing the risk of NCDs.

As Falbe et al. (2023) have demonstrated, the inclusion of warning labels on restaurant menus indicating the presence of added sugar can result in a reduction in orders of such menus and an increase in consumer awareness of the added sugar content of the items served. Meanwhile, a meta-analysis conducted by Scapin et al. (2021) indicated that consumers' understanding of sugar content would be enhanced by the provision of information in the form of text or color-coded indicators indicating high, medium, or low levels, as opposed to the sole use of numerical values. The study also showed that the format of sugar labels comprising warning signs, health message warnings, color-coded indicator labels displaying the text "high in sugar," and graphic descriptions of sugar composition with images of spoons yielded the most favorable outcome in reducing the sugar content of consumer food choices.

Sogari et al. (2019) conducted a study in a large US college dining hall during lunch service, which indicated that providing specific health-related information when serving lunch on campus can influence food consumption. Caruso et al. (2022) also found that consumers of energy drinks consider health-related warning labels impactful. These elaborations resulted in the formulation of the second hypothesis, which is presented below:

H2: Food producers' knowledge, attitudes, and practices significantly affect consumer awareness of food nutrition and the purchase intentions associated with ready-to-serve foods.

JOURNAL OF CONSUMER SCIENCES

3. Conceptual Framework

The conceptual framework employed in the present study integrated knowledge, attitude, and practice regarding food and nutrition labeling to ascertain nutrition awareness in consumers' purchase intentions for ready-to-serve foods. This framework is presented in Figure 1. as posited by Fathin et al. (2023), health beliefs and awareness exert a significant and positive influence on individual purchase intentions. As a result, there will be an increase in the the tendency of customers toward purchasing healthier drinks, which will have a more positive and constructive impact on their purchase intentions and overall perception of the brand. As Sumarwan et al. (2017) observed, consumers in urban areas are more likely to read product labels before making a purchase than their rural counterparts. The results of the study indicated a relationship between the practice of reading labels and an increase in nutrition knowledge. The practice of reading labels influences the purchase of packaged foods. Wang et al. (2022) demonstrated that children who often purchase snacks exhibit low levels of health awareness. Consequently, they require access to nutrition information in the form of Guideline Daily Amount (GDA), Traffic Light System (TLS), and Apple Labels to facilitate the selection of healthier food options. In light of the aforementioned description, the hypotheses proposed in this study can be classified into two categories: (1) those pertaining to consumers and (2) those pertaining to producers. The first hypothesis (H1) posits that consumers' knowledge, attitudes, and practices have a significant effect on nutrition awareness in influencing the intention to purchase ready-to-eat food. The second hypothesis (H2) posits that producers' knowledge, attitudes, and practices have a significant effect on nutrition awareness in influencing the intention to purchase ready-to-eat food.

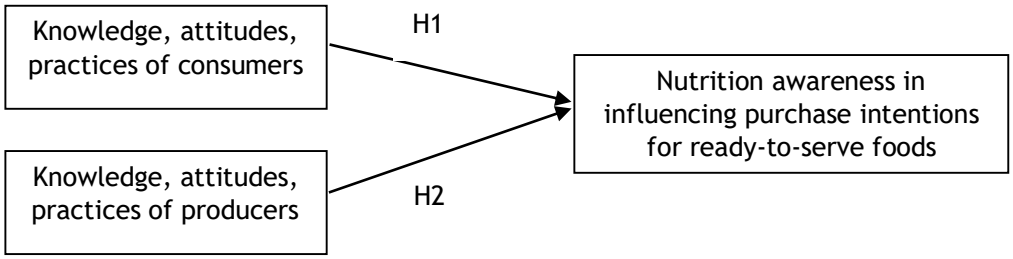

Figure 1. The conceptual framework that integrates knowledge, attitude, and practice regarding food and nutrition labeling.

Accordingly, the following hypotheses were posited in this study:

H1: Consumers' knowledge, attitudes, and practices significantly affect nutrition awareness in the purchase intention of ready-to-serve foods

H2: Producers' knowledge, attitudes, and practices significantly affect nutrition awareness in the purchase intention of ready-to-serve foods.

4. Methods

4.1 Research Design

This study employed a cross-sectional design to investigate consumer behavior and perceptions regarding the purchase of ready-to-serve foods, as well as the practices of food producers in providing these products. Additionally, the study investigated whether the products contribute to the control of SSF intake levels by providing health messages on the food label, as mandated by Regulation of the Ministry of Health of the Republic of Indonesia No.13 of 2013. The study was conducted from May to September 2023 in five locations in

JOURNAL OF CONSUMER SCIENCES

Indonesia: Jakarta, Bandung, Bogor, Bekasi Regency, and Bandung Regency. The selection of these locations was based on their status as culinary tourism centers, renowned for their diverse culinary offerings. This selection was made to ensure a representative sample of Indonesia's culinary landscape.

4.2 Sampling

A total of 100 consumers were selected purposively from various public locations, including educational institutions, campuses, and malls. The purposive selection was made in order to observe a range of participants and locations that are often visited by a large number of people, including teenagers, students, and adults. Meanwhile, with regard to food producers, the Regulation of the Ministry of Health No. 14 of 2021 delineates three categories of food service entrepreneurs. The selection of these groups was made with the objective of ensuring that the resulting sample is representative of the population of food service entrepreneurs in Indonesia. The local health department collected data on 80 selected food service entrepreneurs, including restaurants, catering services, and food stalls. The types of food service entrepreneurs who participated in the focus group discussion (FGD) included ready-to-eat food producers (large, medium, and small scales) with a total of 80 foodservice entrepreneurs divided into two groups: the catering service group and the restaurant group.

4.3 Measurement

This study uses the variables of nutritional knowledge, nutritional attitudes, nutritional practices, and buying behavior. Table 1 presents the variables and indicators observed in the course of this study.

Table 1. Operational definitions and indicators utilized to ascertain the factors determining the inclusion of SSF labeling and health messages on ready-to-serve foods

Variable	Operational definition	Indicators
Nutrition knowledge	The efforts made to improve nutrition knowledge through the provision of nutrition education, specifically in relation to the Regulation of the Ministry of Health No. 13 of 2013, were achieved through the utilization of interviews to investigate perceptions and practices pertaining to the aforementioned Regulation	**For the consumers:** 1) Inclusion criteria: the ability to read and write; age 18–60 years old 2) Open-ended questions regarding three key considerations they make prior to purchasing fast food 3) Ten questions regarding nutritional information, with a particular focus on the content of sugars, salts, and fats, as well as the recommended intake of these nutrients and the presence of health messages by providing the subjects with responses in the form of "true," "false," and "not given" options

JOURNAL OF CONSUMER SCIENCES

Table 1. Operational definitions and indicators utilized to ascertain the factors determining the inclusion of SSF labeling and health messages on ready-to-serve foods (Continue)

Variable	Operational definition	Indicators
Nutrition knowledge	The efforts made to improve nutrition knowledge through the provision of nutrition education, specifically in relation to the Regulation of the Ministry of Health No. 13 of 2013, were achieved through the utilization of interviews to investigate perceptions and practices pertaining to the aforementioned Regulation	**For the food producers:** 1) Inclusion criteria: the position held within the business, which must be in either a large-medium industry (R&D or regulatory affairs division) or a micro-small industry (owner/person in charge) 2) Open-ended questions regarding various aspects of ready-to-eat food in Indonesia that they believe should be given due consideration 3) Ten multiple-choice questions regarding nutrition information, especially the content of sugars, salts, and fats, as well as the recommended intake of these nutrients, and the presence of health messages
Nutrition attitude	The ability of the subject (consumers/food producers) to determine their stance on the inclusion of sugar, salt, and fat labeling, as well as health messages on ready-to-eat food	**For the consumers:** To ascertain the consumers' opinions, indicated by a binary response (yes or no), on the inclusion of information related to SSF contents, health messages, the potential for avoiding non-communicable diseases (NCDs) through limiting SSF intake, and their view on the necessity for government and food industry to prioritize educating the general public regarding SSF intakes **For the food producers:** To determine the subjects' opinions, indicated by "Yes" or "No" responses, on the labeling of nutrition facts about SSF content, the inclusion of health messages regarding SSF content in ready-to-serve foods, the potential of inclusion of such messages to reduce the risk of NCDs among consumers, and the necessity for the ready-to-serve food industry to educate the general public about SSF intakes

JOURNAL OF CONSUMER SCIENCES

Table 1. Operational definitions and indicators utilized to ascertain the factors determining the inclusion of SSF labeling and health messages on ready-to-serve foods (Continue)

Variable	Operational definition	Indicators
Nutrition practice	Actions or habits of the subject (consumer or food producer) with regard to the labeling of information regarding the SSF content of ready-to-serve foods, s well as health messages about the intake of these nutrients	**For the consumers:** To ascertain the frequency with which consumers read nutrition information table or nutrition facts when consuming or purchasing processed food within a one-week timeframe, whether consumers seek information regarding the SSF content of ready-to-eat foods within a one-week timeframe, and whether they limit their intake of these nutrients on a daily basis **For the food producers:** The practices of the food producers were determined through the use of focus group discussions (FGD). Focus group discussions (FGD) were conducted with food producers to ascertain their preparedness to incorporate information regarding the SSF content of their ready-to-serve food products, as well as health messages, into the aforementiones products. The discussion began with open-ended questions regarding the factors that should be considered in the production of ready-to-eat food products in Indonesia. This was followed by ten questions pertaining to the certificate for feasible sanitation and hygiene (SLHS), and five questions concerning their opinions on the inclusion of information on SSF content and health messages, and the necessity of public education on SSF consumption. This was followed by a series of questions aimed at eliciting input, suggestions, or expectations from the the producers, with the objective of ensuring that the regulation is more straightforward to follow if implemented correctly.

JOURNAL OF CONSUMER SCIENCES

Table 1. Operational definitions and indicators utilized to ascertain the factors determining the inclusion of SSF labeling and health messages on ready-to-serve foods (Continue)

Variable	Operational definition	Indicators
Purchase behavior	Consumer behavior in choosing and making decisions to purchase a product, which, in the case of this study, was determined by how often consumers consume ready-to-serve food on a weekly basis	The frequency of consumption of ready-to-serve food was divided into five levels: "Always" (7 times), "Frequently" (5–6 times), "Occasionally" (3–4 times), "Rarely" (1–2 times), and "Never" (0 times). The data on frequency were divided into two categories, “Frequently” and “Rarely”, and then analyzed using regression analysis.

4.4 Data Collection

The study was conducted from May to September 2023 in five locations in Indonesia: Jakarta, Bandung, Bogor, Bogor Regency, and Bandung Regency. The selection of the five locations was based on the identification of cities and regencies in Indonesia that are renowned for their culinary offerings. The data collection process commenced with a pilot study to assess the validity and reliability of the questionnaire, which was administered to a sample of teenagers, students, and employees on campus and in malls in Bogor City. The results of this pilot study showed that the respondents lacked familiarity with the recommendations for daily intake of sugar, salt, and fat and the presentation of health messages on food packaging. Consequently, the questions in that section were revised to include more straightforward sentences to facilitate comprehension.

Subsequently, field surveys were conducted in five locations that had been designated for the main study: Jakarta, Bandung City, Bogor City, Bogor Regency, and Bandung Regency. The data were collected in two forms: secondary data and primary data. The primary data were obtained through the administration of questionnaires and the analysis of the results of focus group discussions (FGDs). Secondary data were obtained through a review of relevant literature, including laws and regulations, scientific publications, and published reports. At the outset of the interview, all participants were requested to read the informed consent section before completing the questionnaire, entering their data, and responding to the questions. The research activity for food producers was divided into two distinct components: interviews conducted using a questionnaire and participation in focus group discussions (FGD). The interviews were designed to assess the knowledge, attitudes, and practices of consumers and ready-to-serve food producers. The level of nutrition knowledge of consumers and producers was classified into three categories: “good” (>80), “moderate” (60-80), and “poor” (<60) (Khomsan, 2022).

4.5 Analysis

The collected data were subjected to processing steps, including editing, coding, scoring, data entry, data cleaning, and data analysis. These processes were conducted using Microsoft Excel, and the resulting data were presented in graphical formats, including pie charts and bar charts. A rating of 1 was assigned to indicate a correct response, while a rating of 0 was assigned to indicate an incorrect response with regard to data pertaining to knowledge and

JOURNAL OF CONSUMER SCIENCES

attitude. A score was assigned based on the frequency of consumers' perusal of nutrition labels over the course of one week. The frequency was categorized into five groups, as follows: (1) Always (7 times); (2) Frequently (5–6 times); (3) Occasionally (3–4 times); (4) Rarely (1–2 times); (5) Never (0 times). Meanwhile, data on the frequency of ready-to-serve food consumption was assigned a score based on frequency over the course of one week, which was categorized into five groups: Always (7 times), Often (5–6 times), Sometimes (3–4 times), Rarely (1–2 times), and Never (0 times). The data analysis on the frequency of ready-to-serve consumption was conducted using binary logistics, with the objective of identifying which consumer characteristics influenced their purchase decisions.

5. Findings

5.1 Characteristics of Consumers

A total of 100 consumers participated in the study, comprising 41 males and 59 females, with an average age of 34. The participants were distributed across five locations: Jakarta City, Bandung City, Bogor City, Bandung Regency, and Bekasi Regency. Most participants (66) were employed, while 19 were housewives, 13 were students, and two were not employed. Most participants had completed high school, and 37 had attended college. The participants' income ranged from IDR 3 to 4 million per month.

5.2 Consumers' Consumption of Ready-to-serve Foods

Figure 2 illustrates the frequency with which consumers consume ready-to-serve foods on a weekly basis. The data indicated that 51% of consumers were classified as "often" consuming ready-to-serve food on a weekly basis. The results also demonstrated that consumers in four of the five regions were predominantly in the "often" category in comparison to the remaining regions. In Jakarta City, although the percentage in the "rarely" category (8%) was the highest in comparison to the other categories, the "often" category was still ranked second (6%). This result indicated that consumers in the five research areas more frequently consumed ready-to-serve food.

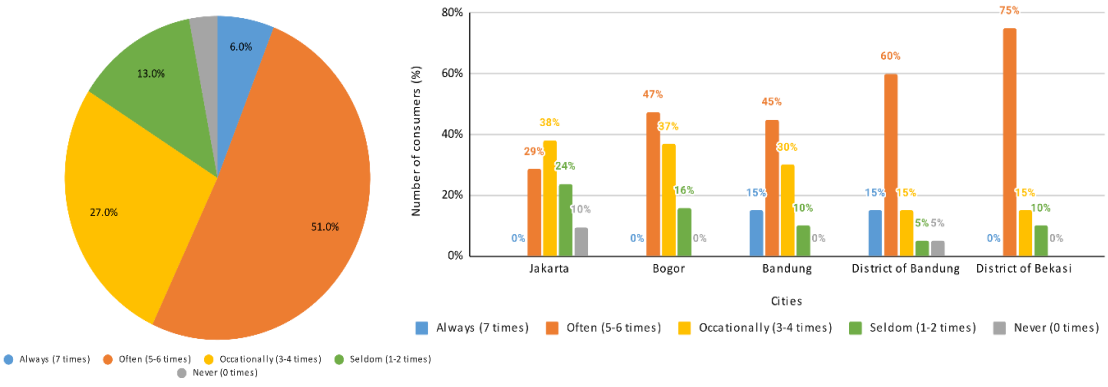

Figure 2. Weekly consumption frequency of ready-to-serve food among consumers (left) and the distribution of this frequency across five Indonesian cities/regencies (right)

JOURNAL OF CONSUMER SCIENCES

5.3 Consumers' Consideration in Purchasing Ready-to-serve Food

Consumers were asked to provide a minimum of three considerations they usually make when purchasing ready-to-serve food, and the results are shown in Figure 3. As illustrated in Figure 3, the primary consideration for consumers when purchasing ready-to-serve food were price (42%), taste (31%), and accessibility (23%). This may be because price and taste are usually associated with food quality, whereas accessibility is related to time efficiency. Some participants opted to consume ready-to-serve food due to a lack of time to prepare meals, especially among the working class. This result aligns with the study by Kahono et al. (2018), which identified taste as the most influential intrinsic factor and price and convenience as the most significant extrinsic factors influencing the purchase intention of healthy snacks among the respondents.

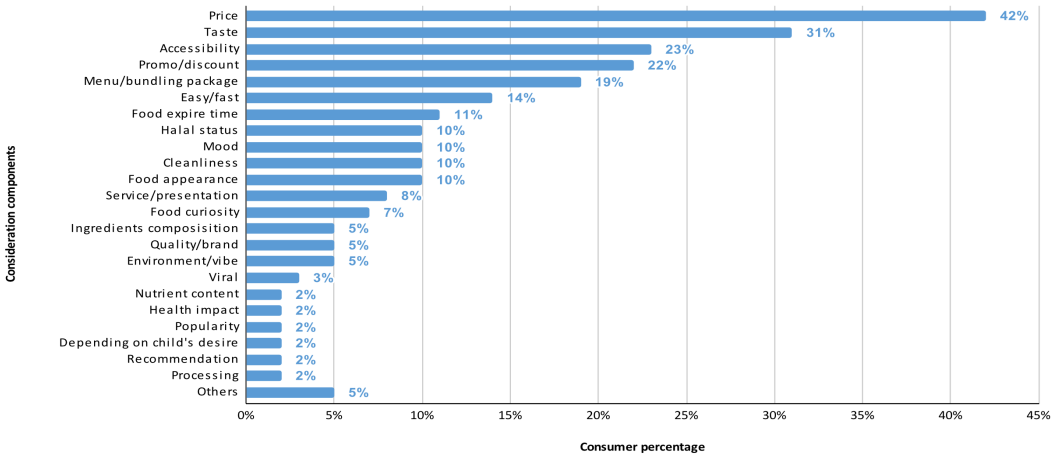

Figure 3. Consumers' preference considerations for purchasing ready-to-serve food

5.4 Factors Influencing Consumers' Decisions to Purchase Ready-to-Serve Food

The data were subjected to binary logistics regression analysis to ascertain which consumer characteristics influence their purchase decisions with regard to ready-to-serve food. The results are shown in Table 2. No significant relationship was observed between the consumers' characteristics, including age, gender, occupation, and educational background, and their purchase decisions regarding ready-to-serve food. However, a significant relationship was identified between consumers' income and their purchase decision regarding ready-to-serve food, with a p-value<0.05.

Table 2. Relationship between consumers' characteristics and their purchase decision of ready-to-serve food

Consumer's characteristics	p-value*
Age	0.594
Gender	0.125
Occupation	0.127
Educational background	0.948
Income	0.007**

Notes: *Binary logistic regression; **significant at p-value<0.05

JOURNAL OF CONSUMER SCIENCES

5.5 Consumers' Practices Related to Information on SSF Content in Ready-to-Serve Foods

Figure 4 presents the frequency with which consumers engage in the practice of checking information pertaining to the SSF content of ready-to-serve foods. Approximately 32–37% of consumers "always" review this information prior to making a purchase. Notably, the highest proportion of participants indicated that they frequently check the salt content (47%), followed by fat (39%) and sugar (34%).

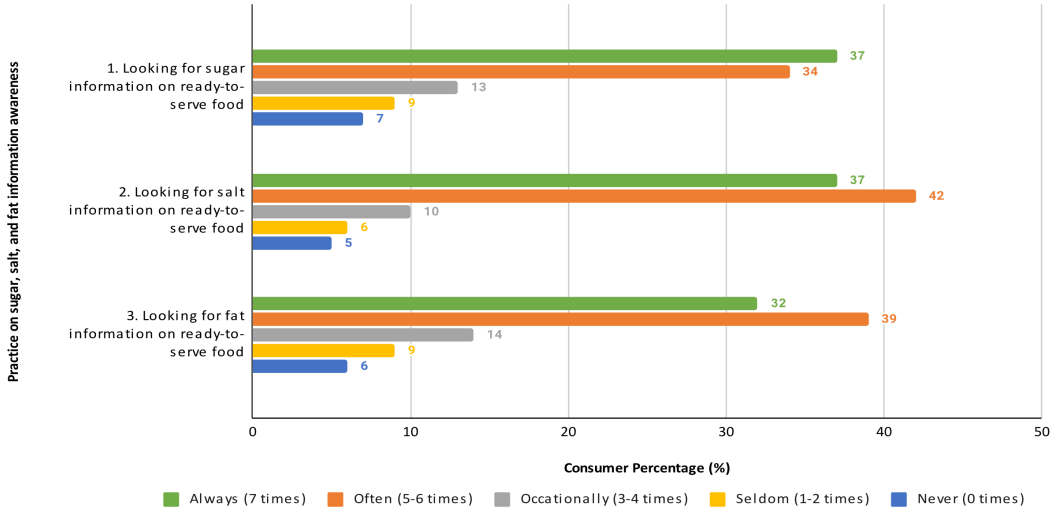

Figure 4. The frequency with which consumers engage in the practice of checking information regarding sugar, salt, and fat in ready-to-serve foods

5.6 Characteristics of Ready-to-serve Food Producers

The ready-to-serve food producers who participated in the study were from five different locations: Jakarta, Bandung, Bogor, Bekasi Regency, and Bandung Regency. A total of 80 participants were involved, representing their respective businesses (39 males and 41 females with an average age of 39), either as proprietors or employees. Most participants (55) had obtained a tertiary education, while 24 had completed high school. The participants were divided into two groups: 40 from a micro-small group of food producers (PIRT) and 40 others from a medium-large group of food producers. The participants were classified according to their products into two categories: food service and restaurant (Figure 5). The grouping of ready-to-serve food producers revealed that those in the medium-large category mainly catered to companies, government agencies, and specific occasions, whereas those in the micro-small category mainly provided healthy personal or occasion-based catering service. The medium-large scale restaurant group was mostly composed of fast food restaurants and cafes, whereas the micro-small group was mainly made up of the small food premises selling traditional cookies, buns, bubble tea drinks, and other similar products.

JOURNAL OF CONSUMER SCIENCES

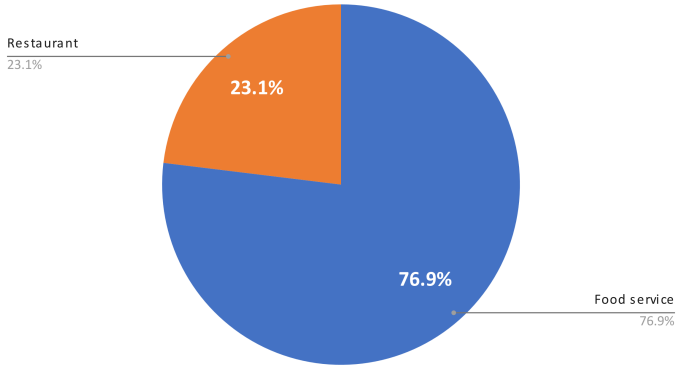

Figure 5. Categories of ready-to-serve food producers

5.7 Producers' Knowledge of Food Safety, SSF Content Information, and Health Messages Regarding Ready-to-serve Foods

As illustrated in Figure 6, the questionnaire results completed by food producers indicated that the participants believe 15 components must be considered when producing ready-to-serve foods. In response to the open-ended question, food producers indicated which components they deemed essential for the production of ready-to-serve foods. Of the 80 participants, 53.8% identified cleanliness or hygiene as the component receiving the most attention. The majority of producers demonstrate a relatively high level of familiarity with food safety and its importance. This may be attributed to the current policy on sanitation and hygiene certification for ready-to-serve food businesses (Regulation of the Minister of Health No. 14 of 2021). The producers also assessed the quality of the raw materials, sugar, salt, and fat content, the nutritional value, food storage processes, and expiration, if applicable. In addition, the food producers identified packaging, the process from production to sales, and consumer food safety as essential considerations.

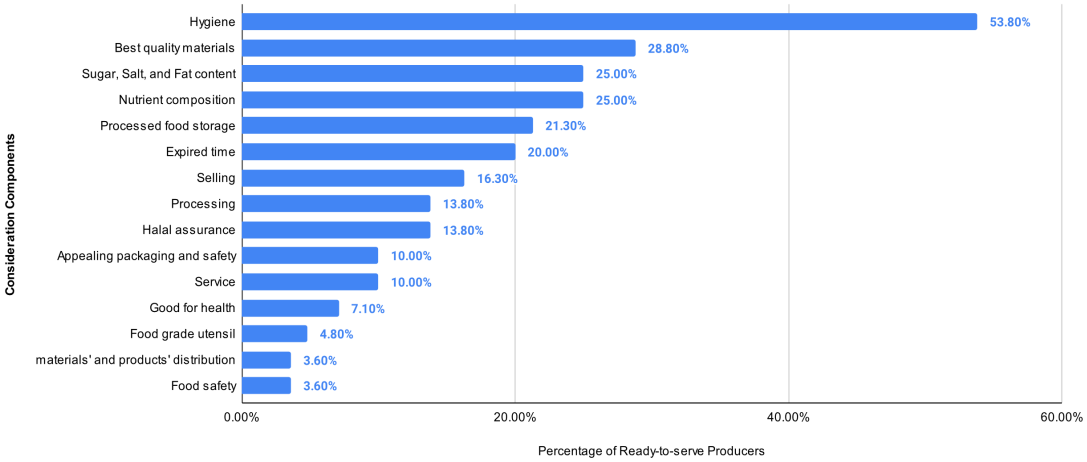

Figure 6. Food producers' considerations in the production of ready-to-serve foods

Table 3 illustrates the knowledge of ready-to-serve food producers regarding the content of SSF in their products and the labeling of health messages. The highest score of 85.7% was related to the correct storage of food ingredients, with particular attention to the first-in-first-out (FIFO) principle. This score demonstrated that ready-to-serve producers understood the principles underlying the storage of raw materials to produce a quality product. Meanwhile, the lowest percentage, 35.7%, was associated with regulations pertaining to the

JOURNAL OF CONSUMER SCIENCES

standards for raw material quality and the requirements for a certificate of feasible hygiene and sanitation for the production, preparation, and handling of ready-to-serve food products.

Following the completion of the questionnaire, an assessment was conducted by grouping the level of knowledge through the calculation of the number of correct responses multiplied by 100. A moderate level of knowledge was demonstrated by 37.50% of ready-to-serve food producers, while 36.25% exhibited a lack of knowledge and 26.30% demonstrated a good level of knowledge. In general, ready-to-serve food producers exhibited a deficiency in knowledge regarding SSF content information and the labeling of health messages pertaining to the food products they produce.

Table 3. Percentage of correct responses from ready-to-serve food producers regarding SSF content information and health message labeling on ready-to-serve food products

No	Questions	n	%
1	All ready-to-serve food producers, refill depots, restaurants, and artisans engaged in the production of soy-based foods (tofu and tempeh) are required to possess a Certificate of Feasible Hygiene Sanitation, as stipulated by the Regulation of the Ministry of Health Number 14 of 2021.	28	33.3
2	A certificate for feasible hygiene and sanitation for food handling practices is rendered invalid if the entity designated as the certificate holder engages in no business activities for a period of 6 (six) consecutive years.	35	41.7
3	Food production licensing is not a principle of sanitation and hygiene in ready-to-serve food production and handling processes.	48	57.1
4	The certificate for feasible hygiene and sanitation for ready-to-serve food products is valid for a period of three years.	54	64.3
5	Food ingredients must be stored in accordance with the first-in-first-out principle, which dictates that earliest stored items are processed first.	72	85.7
6	The sodium content listed in the nutrition information table represents the salt content of the food product in question.	70	83.3
7	The maximum recommended daily intake of sugar is four tablespoons (50 g).	44	52.4
8	The maximum recommended daily intake of salt or sodium is one teaspoon (2000 mg).	58	69.0
9	The maximum recommended daily intake of fat is five tablespoons (67 g).	41	48.8
10	By paying attention to health messages, individuals can limit their consumption of sugar, salt, and fat to avoid non-communicable diseases.	56	66.7

Notes: n=total of respondents

5.8 Attitude of Food Producer Toward the Labeling of SSF Content Information and Health Message on Ready-to-serve Food Products

Figure 7 illustrates the attitudes of producers of ready-to-serve food products regarding the information than should be provided about the SSF content of their products, as well as the health messages that should be included in the packaging. A majority of over 80% of ready-to-serve food producers responded positively to the questions regarding their attitudes toward the labeling of SSF content information and health messages. This included questions

JOURNAL OF CONSUMER SCIENCES

regarding the necessity of labeling SSF content in ready-to-serve food products and including health messages on food packaging. The participants were asked whether such labeling may reduce the risk of NCDs, and whether food producers should educate the public about SSF intake. The highest percentage, namely 98%, was observed for the item concerning the necessity of labeling health messages related to SSF content on ready-to-serve food products.

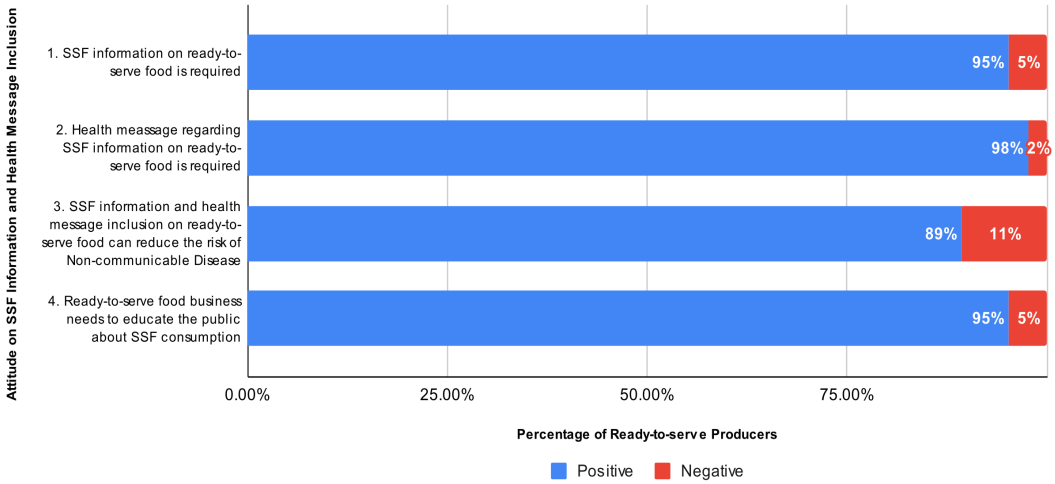

Figure 7. Attitudes of ready-to-serve food producers toward SSF content information and health message labeling

5.9 Producer Practices in Business Licensing and Food Safety and Quality in Ready-to-Serve Food

To gain deeper insight into the current conditions from the perspective of ready-to-serve food producers, focus group discussions (FGDs) were conducted to examine the implementation of business licensing, the maintenance of food quality, and the provision of assistance from related parties. A significant proportion of producers (83.8%) demonstrated familiarity with the business licensing process yet needed help recalling the precise details of the required documents. Some responses mentioned NIB (business permit number), SLHS (certificate for feasible hygiene and sanitation), food handler's certificate, and halal certificate. It was observed that food producers in three out of five regions selected for the study had positive relations with the local health office. Producers in Bandung Regency stated that, in addition to the health office, there had been a visit initiated by the culture and tourism office (Disbudpar) to the ready-to-serve food production location for tourism purposes. It was also found that local food service associations had roles in three of the five regions, namely, to oversee, collect, and share information between fellow food service producers.

5.10 Producer Practices in Labeling the SSF Content of Ready-to-Serve Food Products and Including Health Messages on Their Packaging

The Regulation of the Minister of Health No. 30 of 2013 established the requirements for labeling SSF content information and health messages on ready-to-serve food product packaging. Focus group discussions (FGDs) were conducted to analyze the regulation's implementation from the producers' perspective. The discussions centered on the challenges and strategies associated with labeling SSF content information and health messages in ready-to-serve food products, as well as efforts to control SSF intakes.

JOURNAL OF CONSUMER SCIENCES

A total of 92.5% of producers of ready-to-serve foods indicated that they lacked information regarding the nutritional value of their products. Nevertheless, five producers (7.5%), primarily engaged in food catering, offered menus for specific dietary needs. The nutritional value of these menus was included in the menu lists or packaging, as requested by consumers/clients who desired a healthy menu option. Additionally, one producer stated that he was preparing to include nutritional value information in the following year.

The majority of participants (93.75%) indicated that their ready-to-serve food businesses were equipped to provide food delivery via online orders placed via digital applications or WhatsApp. Some producers did not accept online orders via digital applications because their business was a restaurant or catering service that catered for large-scale orders, such as those from companies for their employees' lunch and pre-orders by corporate clients or for specific occasions. Moreover, the majority of producers offered takeaway options, with the food items packaged in containers made of paper, styrofoam, or plastic. The majority of producers did not include information on the packaging of their food products regarding the SSF content information, nor did they include any health messages. However, several producers did include information such as the producer's or brand's name and the expiration date or shelf life of the ready-to-serve food product. Furthermore, the majority of producers stated that consumers rarely inquire about the nutritional content of their products in great detail.

6. Discussions

6.1 Consumer Perceptions of SSF Content Information and Health Messages on Ready-to-Serve Food Products

Hypothesis 1 (H1) posits that consumers' knowledge, attitudes, and practices significantly affect their nutrition awareness and subsequent purchasing intentions regarding ready-to-serve foods. There is a paucity of data concerning the consumption of ready-to-serve foods in Indonesia. The objective of this study was to ascertain consumer behavior about the consumption of ready-to-serve food every week in five cities in Indonesia. The results indicated that consumers "often" (5-6 times) consume ready-to-serve food on a weekly basis. This consumption pattern was observed in four cities. The binary logistic regression model also showed a statistically significant relationship between consumer income and the purchase of ready-to-serve food. These results are consistent with those of Puddephatt et al. (2020), which identified income as the primary determinant of consumer food choices, with the purchase decisions primarily driven by cost consideration. Additionally, Ahmed (2020) demonstrated that other consumer characteristics, such as gender, education, and occupation, also significantly influence the purchase of ready-to-serve foods.

An open question identified the three primary consumer considerations in purchasing ready-to-serve food: price, taste, and accessibility. This result aligns with a meta-analysis study conducted by Saha et al. (2021), which identified several key factors influencing the consumption of ready-to-eat food, including taste, brand, accessibility, cleanliness, variety, promotions, and serving times. Additionally, Kahono et al. (2018) identified taste as the most influential intrinsic factor, and price and convenience were the extrinsic factors affecting the respondents' purchase intention for healthy snacks. This showed that ready-to-serve food components related to nutrition and health, especially nutrition content, have not been a primary consideration for consumers when purchasing ready-to-serve food. Only a small

JOURNAL OF CONSUMER SCIENCES

proportion of consumers considered nutrition content and health impact in purchasing ready-to-serve food. These results align with a study conducted by Munasiroh et al. (2019), which examined the purchase of ready-to-eat food by students. The study showed that although students are aware of food safety in ready-to-eat food, they exhibit minimal attention to its nutritional content (Munasiroh et al., 2019). This result rejected H1. Despite frequent consumption of ready-to-serve food, the consumer's nutritional knowledge and awareness remain unconsidered during the purchasing process.

The present study also elucidated consumers' practices regarding the awareness of nutritional information, specifically SSF content, as well as health messages on ready-to-serve food product packaging. Despite the fact that only 2% of consumers indicated that they consider nutrition and health in their purchasing decisions, the majority of them reported that they "often" read the labels indicating the SSF content on ready-to-serve food products. In particular, 47% reported reading the salt content label, 39% reported reading the fat content label, and 34% reported reading the sugar content label. The majority of participants who perused nutrition value information on the packaging of the food products in question indicated that they did so to ascertain the nutritional content of the products, limiting their intake of certain nutrients, and regulating their eating patterns and diet. A study by Sumarwan et al. (2017) showed that some consumers sometimes read food packaging labels, while others often read them. The study revealed a relationship between nutrition knowledge and label reading habits. Additionally, it indicated that label-reading behavior influences packaged food purchases (Sumarwan et al., 2017). A similar study conducted in supermarkets in Madrid revealed that the main reason consumers read nutrition information was to make healthier product choices (Castillo et al., 2015).

Regarding the labeling of health messages, Sumarwan et al. (2019) demonstrated that in groups exposed to a warning label, there was a significant difference in consumption intention, as evidenced by the pre-test and post-test results with a value of $\alpha = 0.01$. In the pre-test, more than half (56.3%) of the participants indicated a moderate intention to consume soft drinks, 40.6% exhibited low intention, and only 3.1% demonstrated high intention. In contrast, in the post-test, over half (53.1%) of the participants exhibited low consumption intentions, while less than half (46.9%) demonstrated moderate level of intentions. Furthermore, Han et al. (2020) showed that there was a positive impact on the quality of menu information at fast food kiosks on the users' perceived usefulness ($\beta = 0.313$, $t = 3.630$), perceived ease of use ($\beta = 0.372$, $t = 3.980$), and perceived enjoyment ($\beta = 0.299$, $t = 3.417$). This also highlighted the necessity for nutrition awareness education with respect to ready-to-serve food consumption, as well as for all pertinent sectors to furnish customers with nutrition information.

6.2 Perceptions of Producers Regarding the Labeling of SSF Content Information and Health Message on Ready-to-Serve Food Products

The ready-to-serve food producers who participated in this study demonstrated an awareness of the critical considerations pertaining to hygiene and sanitation in the production and handling of ready-to-serve food products. However, the knowledge of ready-to-serve food producers regarding the regulations pertaining to quality standards and health requirements, as well as sanitation and hygiene certification, remained limited. Only 33.3% of them demonstrated a satisfactory level of knowledge in this regard (Table 3). The overall result of the ready-to-serve food producers' knowledge was categorized as moderate (37.5%), yet their knowledge regarding the recommended maximum daily intakes of SSF per day was

JOURNAL OF CONSUMER SCIENCES

noteworthy, with 48–69% of them providing the correct answer on maximum daily intakes of these nutrients. Given the exemplary knowledge demonstrated by ready-to-serve producers regarding the recommended maximum daily intake of SSF, it is plausible that they will prioritize the labeling of health messages on their food products in the future. Furthermore, 98% of producers exhibited a positive attitude toward labeling health messages related to SSF content on their ready-to-serve food products (Figure 6). The results showed that H2 was not supported. The producers exhibited good knowledge and attitudes regarding food safety and recommended daily intake of SSF. However, they had not implemented the labeling of SSF content information and health messages on their ready-to-serve food products. Consequently, the purchase intention influenced by nutrition awareness, as perceived by the producers, remains contingent on consumer demand.

In the current context, the registration and permit acquisition processes for ready-to-serve food businesses are managed through the OSS (Online Single Submission) system. In accordance with Regulation of the Minister of Health No. 14 of 2021, several documents are required for the issuance of permits for ready-to-serve food business. These include business registration number (NIB), the certificate for feasible hygiene and sanitation (SLHS), which includes laboratory test results demonstrating compliance with the Environmental Health Quality Standards (SBMKL) and health standard requirements, and proof of competence, as evidenced by a certificate issued by the National Professional Certification Authority (BNSP). The certificate for feasible hygiene and sanitation is a mandatory document that must be obtained at least one year after the issuance of the business registration number (NIB) by the OSS system. The ready-to-serve food producers participating in the present study have implemented a variety of measures to maintain the quality of the food served. These include the implementation of SOPs for food preparation, processing, and serving; the provision of appropriate protective clothing for food handlers and employees; the maintenance of environmental cleanliness and food safety; the selection of good-quality raw materials; the application of good storage process with a first in, first out (FIFO) system; and the limitation of consumption time. It is anticipated that the implementation of exemplary hygiene and sanitation practices will ensure the maintenance oof safe food quality for consumers.

Up until this point, no regulations in Indonesia have required the inclusion of nutrition content information on ready-to-serve food items, whether on the packaging, cutlery, banners, pamphlets, or menu books. The only exception to this is Regulation of the Minister of Health No. 30 of 2013. However, the implementation of policies requiring the inclusion of calorie information on processed food menus in restaurants and catering services has been observed in several countries. Examples include the United States (FDA, 2014), England (The Calorie Labeling (Out of Home Sector) (UK Government, 2021), Australia, and New Zealand (Australian Government, 2022). One study emphasized the importance of making calorie information easier to understand and more accessible to the public, particularly those with lower numeracy levels, in order to increase the reach and impact of such information (Bleich et al., 2017).

The regulation of SSF content in ready-to-serve food products in Indonesia remains largely confined to the domain of food safety. This is evidenced by the stipulation in Regulation of the Minister of Health No. 14 of 2021 concerning Standards for Business Activities and Products in the Implementation of Risk-Based Business Licensing that businesses must adhere to feasible hygiene and sanitation standards. At present, there is no explicit effort by producers to provide information regarding the SSF of their ready-to-serve food products, nor are there any health messages about the recommended intake of these nutrients. This

JOURNAL OF CONSUMER SCIENCES

may be attributed to the wide variety of food products and the necessity for more proper guidance and assistance to include SSF content information and health message regulation. Furthermore, Han et al. (2020) proposed that the industry should consider the types of information that customers may find valuable in nutrition labels, such as SSF content, and presents it in a more accessible format. This could potentially assist consumers in making more informed decisions regarding their dietary choices. Nevertheless, there have been efforts to adapt to consumer demand. The majority of producers participating in the present study provide food options with reduced sugar or salt content upon consumer request. This illustrates the importance of consumer awareness regarding their dietary intake, especially their daily consumption of sugar, salt, and fat (SSF).

6.3 Managerial Implications

Nutrition labeling is a mandatory requirement set forth in Regulation of the Minister of Health No. 30 of 2013. However, there are no regulations regarding ready-to-serve food (RTF). Nevertheless, Regulation of the Ministry of Health No. 63 of 2015 was amended in 2015, thereby requiring the inclusion of information regarding sugar, salt, and fat content of food products. This, in turn, indirectly requires the calculation or analysis of the nutritional content of the food in question. The current regulation is deficient in several respects. Chief among these is the need for more detailed technical instructions on how to ascertain the amount of these three nutrients, what language or sentences are permitted for health message displays, or other matters such as size, color, and type of font. In addition, there is a need for technical guidelines to facilitate the implementation of the regulation by the food product industry. It is, therefore, incumbent upon policymakers to update the regulations with more detailed instructions. Should such instructions be issued, food producers will need intensive socialization to accommodate the regulation on the label of their food products within a certain grace period. Eventually, a more comprehensive reach of nutrition educational activities will also be needed to educate consumers on the function of all the nutrition information appearing on food labels.

6.4 Theoretical Contribution

The present study is predicated on the concept of consumer behavior. As posited by Sumarwan (2017), consumer behavior encompasses all behaviors, actions, and mental processes engaged by consumers when assessing goods and services before purchase, use, and expenditure. A consumer decision model is a component of consumer behavior. The decision-making processes employed by consumers are dependent upon their background and preferences (Wulandari & Sampouw, 2020). Regarding food purchases, the perusal of product labels—including nutrition labels—is a consumer habit preceding the purchase decision. It is thus anticipated that the enhancement of consumer awareness and the fulfillment of regulatory requirements regarding the provision of nutritional information on food products will culminate in the implementation of food and nutrition labeling, especially with respect to the labeling of SSF content, as well as the incorporation of health message label, as an essential factor influencing consumer decision-making in the context of ready-to-serve foods.

6.5 Limitations

This study is limited by its focus on the Jakarta Region and West Java Province. A more comprehensive sampling location would better reflect the actual condition in Indonesia.

JOURNAL OF CONSUMER SCIENCES

7. Conclusions

Among the factors influencing consumers' food choices in Indonesia, it is regrettable that nutrition and health aspects were not identified as among the top three factors affecting consumers' purchase decisions regarding food products. Instead, price, taste, and accessibility were identified as the primary considerations. Nutrition content information and health messages about SSF intake were not a primary consideration for consumers prior to making a purchase. Meanwhile, from the perspective of food producers, nutrition labels, including those indicating the content of sugars, salts, and fats, and health messages concerning the intake of these nutrients were also not considered when designing labels for their ready-to-serve food products. Furthermore, in the absence of specific requests from the customer for food items with reduced levels of sugar, salt, and fat, the producers in this study did not actively regulate the content of these three nutrients in their food products. The findings of this study highlight the imperative for improving consumer awareness of food and nutrition labeling and for updating the regulations and technical guidelines for producers of ready-to-serve food products. It is hoped that increased consumer awareness, more definitive regulations to be adhered to by food producers, and improved compliance from the food producers will assist in controlling SSF intake among the population in Indonesia, thereby further contributing to the reduction of the risks of non-communicable diseases.

8. Recommendation

Future initiatives should prioritize the dissemination of knowledge among consumers and the enforcement of regulatory standards to effectively address nutritional concerns and align consumer preferences for more nutritious food options, especially in relation to the sugar, salt, and fat content of ready-to-serve foods. The findings of the present study are anticipated to significantly impact future policy and practice, emphasizing the necessity for a more comprehensive approach to nutrition labeling and consumer education in Indonesia's rapidly growing ready-to-serve food industry.

Citation information
Cite this article as: Nasution, Z., Rimbawan, R., Fajriaty, D., Nasir, S. Q., Sutrisna, A., Sari, E. K., Susanti, E. (2024). Nutrition information and health message on sugar, salt, and fat content on ready-to-serve food products in Indonesia: an examination of consumers' and producers' perspectives. *Journal of Consumer Sciences, 9*(3), 451-475. https://doi.org/10.29244/jcs.9.3.451-475

References

Ahmed, M. R. (2023). Household consumption expenditure behavior towards outside ready-made food: Evidence from Bangladesh. *Heliyon*, *9*(9), e19793. https://doi.org/10.1016/j.heliyon.2023.e19793.

Atmarita, A. (2016). Asupan gula, garam dan lemak di indonesia: analisis survei konsumsi makanan individu (SKMI) 2014. *Journal of the Indonesian Nutrition Association. Gizi Indonesia, 39*(1), 1-14. https://doi.org/10.36457/gizindo.v39i1.201.

Australian Government. (2022, November 22*)*. Decisions regulation impact statement: menu labelling in Australia and New Zealand. OIA The Office of Impact Analysis. https://oia.pmc.gov.au/published-impact-analyses-and-reports/menu-labelling-australia-and-new-zealand

JOURNAL OF CONSUMER SCIENCES

Bleich, S. N., Economos, C. D., Spiker, M. L., Vercammen, K. A., VanEpps, E. M., Block, J. P., Elbel, B., Story, M., & Roberto, C. A. (2017). A systematic review of calorie labeling and modified calorie labeling interventions: impact on consumer and restaurant behavior. *Obesity, 25*(12),2018–2044. https://doi.org/10.1002/oby.21940

Calabro, R., Kemps, E., & Prichard, I. (2023). Socio-cognitive determinants of sugar-sweetened beverage consumption among young people: A Systematic review and meta-analysis. *Appetite*. 180,106334. https://doi.org/10.1016/j.appet.2022.106334.

Caruso, J., Miller, C., Turnbull, D., & Ettridge, K. (2022). A randomized experimental study comparing perceptions of two energy drink health warning labels. *Health Promotion Journal of Australia*, *34*(1), 100–110. https://doi.org/10.1002/hpja.655

Castillo, L. P., Bordonada, M. A. R., & Geromini, A. M. (2015). Information search behavior, understanding and use of nutrition labeling by residents of Madrid, Spain. *Public Health*, *129*(3), 226-236. https://doi.org/10.1016/j.puhe.2014.12.003.

Databoks. (2023, February 10). Intensitas mengonsumsi makanan cepat saji dalam sepekan berdasarkan gender. katadata.co.id. https://databoks.katadata.co.id/publikasi/2023/02/10/top-brand-survey-fast-food

Falbe, J., Musicus, A. A, Sigala, D. M, Roberto, C. A, Solar, S.E, Lemmon, B., Sorscher, S., Nara, D., & Hall, M. G. (2023). Online RCT of icon added-sugar warning labels for restaurant menus. *American Journal of Preventive Medicine*, *5*(1),101-111. https://doi.org/10.1016/j.amepre.2023.02.007.

[FDA] Food and Drug Administration United States Government. (2014). Food labeling: nutrition labeling of standard menu items in restaurants and similar retail food establishments. *Federal Register*, *79*(230), 71156-71259. https://www.govinfo.gov/content/pkg/FR-2014-12-01/pdf/2014-27833.pdf

[FDA] Food and Drug Administration Indonesia. (2022, January 22). Peraturan Kepala Badan Pengawas Obat dan Makanan Nomor 1 Tahun 2022 Tentang Pengawasan Klaim pada Label dan Iklan Pangan Olahan. BPOM. https://peraturan.bpk.go.id/Details/223956/peraturan-bpom-no-1-tahun-2022

[FDA] Food and Drug Administration Indonesia. (2021, November 2). Peraturan Kepala Badan Pengawas Obat dan Makanan Nomor 26 Tahun 2021 Tentang Informasi Nilai Gizi pada Label Pangan Olahan. BPOM. https://peraturan.bpk.go.id/Details/223934/peraturan-bpom-no-26-tahun-2021

[FDA] Food and Drug Administration Indonesia. (2021, August 2). Peraturan Kepala Badan Pengawas Obat dan Makanan Nomor 20 Tahun 2021 Tentang Perubahan atas Peraturan BPOM Nomor 31 Tahun 2018 tentang Label Pangan Olahan. BPOM. https://peraturan.bpk.go.id/Details/181758/peraturan-bpom-no-20-tahun-2021

[FDA] Food and Drug Administration Indonesia. (2021). Keputusan Kepala Badan Pengawas Obat dan Makanan Nomor HK.02.02.1.2.12.21.494 Tahun 2021 tentang Penambahan Jenis, Deskripsi, Nilai Kandungan Gizi,

JOURNAL OF CONSUMER SCIENCES

dan Takaran Saji Pangan Olahan yang Diproduksi oleh Usaha Mikro dan Usaha Kecil yang Wajib Mencantumkan Informasi Nilai Gizi. BPOM. https://bikinpabrik.id/wp-content/uploads/2024/04/HK.02_.02_.1_.2_.12_.21_.494_Kepka_Penambahan_ING_untuk_JDIH.pdf

Fathin, F. F., Sosianika, A., Amalia, F. A., & Kania, R. (2023). The role of health consciousness and trust on gen y and gen z intention to purchase functional beverages. *Journal of Consumer Sciences*, *8*(3), 360-378. https://doi.org/10.29244/jcs.8.3.360-378

Hajijah, R. N., & Retnaningsih, R. (2024). The Influence of Knowledge and Risk Perception on Food Label Reading Behavior among Adolescents in Rural and Urban Areas of Bogor. *Journal of Consumer Sciences*, *9*(1), 82-101. https://doi.org/10.29244/jcs.9.1.82-101.

Han, J., Moon, H., Oh, Y., Chang, J.Y., Ham, S. (2020). Impacts of menu information quality and nutrition information quality on technology acceptance characteristics and behaviors toward fast food restaurants' kiosks. *Nutrition Research Practice*, 14(2):167–174. https://doi.org/10.4162/nrp.2020.14.2.167.

[IHME] The Institute for Health Metrics and Evaluation. (2024, May 16). Global Burden of Disease: Findings from the GBD 2021 Study. healthdata.org. https://www.healthdata.org/research-analysis/gbd.

Kahono, G. A., Rahmawati, D., Putra, K., Prawira, Y., Gunawan Puteri, M. D. P. T., & Marpaung, A. M. (2019). Preferences and factors influencing the purchase intention of healthy snacks among millennials in Jakarta (Published master's theses). Swiss German University.

Khomsan, A. (2022). *Teknik Pengukuran Pengetahuan Gizi*. Jilid 1. IPB Press.

Lamorte, W. W. (2022, November 3). The Theory Planned Behavior. Behavioral Change Models. https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/BehavioralChangeTheories3.html#:

Mauludyani, A. V. R., Nasution, Z., Aries, M., Rimbawan, & Egayanti, Y. (2021). Knowledge on nutrition labels for processed food: effect on purchase decision among indonesian consumers. *Jurnal Gizi dan Pangan*, *1*(1), 47-56. https://doi.org/10.25182/jgp.2021.16.1.47-56.

Ministry of Health. (2013, April 16). Regulation of Indonesian Ministry of Health No. 30 regarding The Inclusion of Sugar, Salt, Fat, and Health Messages for Processed and Ready-to-serve Food. Kemenkes. https://peraturan.bpk.go.id/Details/172111/permenkes-no-30-tahun-2013

Ministry of Health. (2024, January 31). Prevent increasing diabetes, do not consume too much sugar, salt, fat. sehatnegeriku. https://sehatnegeriku.kemkes.go.id/baca/rilis-media/20240131/2544885/cegah-meningkatnya-diabetes-jangan-berlebihan-konsumsi-gula-garam-lemak/

Ministry of Health. (2021, April 1). Regulation of Indonesian Ministry of Health No. 14 regarding Standards for Business Activities and Products in Risk-Based Health Sector Licensing. Kemenkes. https://peraturan.bpk.go.id/Details/203315/permenkes-no-14-tahun-2021

JOURNAL OF CONSUMER SCIENCES

Munasiroh, D., Nurawali, D.O, Rahmah, D.A, Suhailah, F., & Yusup, I.R. (2019). Faktor-faktor yang berhubungan dengan perilaku konsumsi makanan cepat saji (fast food) pada mahasiswa An-Nadaa. *Jurnal Kesehatan Masyarakat*, *6*(2), 46-51. http://dx.doi.org/10.31602/ann.v6i2.2681.

Puddephatt, J. A., Keenan, G. S., Fielden, A., Reaves, D. L., Halford. J. C. G., & Hardman, C. A. (2020). 'Eating to survive': A qualitative analysis of factors influencing food choice and eating behavior in a food-insecure population. *Appetite*. 147, 104547. https://doi.org/10.1016/j.appet.2019.104547

Rai, S., Wai, P. P., Koirala, P., Bromage, S., Nirmal, N. P., Pandiselvam, R., ... & Mehta, N. K. (2023). Food product quality, environmental and personal characteristics affecting consumer perception toward food. *Frontiers in Sustainable Food Systems*, *7*, 1222760. https://doi.org/10.3389/fsufs.2023.1222760

Randall, T., Cousins, A. L., Neilson, L., Price, M., Hardman, C. A., & Wilkinson, L. L. (2024). Sustainable food consumption across Western and Non-Western cultures: A Scoping review considering the theory of planned behavior. *Food Quality and Preference*. 114, 105086. https://doi.org/10.1016/j.foodqual.2023.105086.

Saha, S., Al Mamun, M. A., & Kabir, M. R. (2022). Factors affecting fast food consumption among college students in South Asia: a systematic review. *Journal of the American Nutrition Association, 41*(6), 626-636. https://doi.org/10.1080/07315724.2021.1940354.

Sogari, G., Li, J., Lefebvre, M., Menozzi, D., Pellegrini, N., Cirelli, M., Gomez, M.I., & Mora, C. (2019). The influence of health messages in nudging consumption of whole grain pasta. *Nutrients*, 11(12), 2993. https://doi.org/10.3390/nu11122993.

Sogari, G., Pucci, T., & Caputo, V. (2023). The theory of planned behavior and health diet: Examining the mediating effect of traditional food. *Food Quality and Preference*, 104,104709. https://doi.org/10.1016/j.foodqual.2022.104709

Scapin, T., Fernandes, A. C., Curioni, C. C., Pettigrew, S., Neal, B., Coyle, D. H., Rodrigues, V. M., Bernardo, G. L., Uggioni, P. L., & Proenca, R. P. C. (2021). Influence of sugar label formats on consumer understanding and amount of sugar in food choices: a systematic review and meta-analyses. *Nutrition Science,79*(7), 788-801. https://doi.org/10.1093/nutrit/nuaa108

Sumarwan, U. (2017). *Perilaku Konsumen: Teori dan Penerapannya dalam Pemasaran*. Ed. Kedua. Ghalia Indonesia.

Sumarwan, U., Atilah, S., & Lestari, V.L. (2019). Warning label and video efficacy on high school student consumption of soft drink and fast food. *Journal of Consumer Sciences*, *4*(1), 48–60. https://doi.org/10.29244/jcs.4.1.48-60.

Sumarwan, U., Simanjuntak, M., & Yuliati, L.N. (2017). Meta-analysis study: reading behavior of food products label. *Journal of Consumer Sciences*, *2*(2), 26. https://doi.org/10.29244/jcs.2.2.26-40.

Sutanto, F. V., & Gunawan, L. (2023). The effect of price, product,

JOURNAL OF CONSUMER SCIENCES

promotion towards consumers' purchase intention at T4U Indonesia, West Surabaya Branch. *Jurnal Entrepreneur Dan Entrepreneurship, 12*(2), 141–154. https://doi.org/10.37715/jee.v12i2.4003

UK Government. (2021, July 27). The Calorie Labelling (Out of Home Sector) (England) Regulations 2021,909. legislation.gov.uk. https://www.legislation.gov.uk/uksi/2021/909/made/data.pdf

[UNICEF] United Nations International Children's Emergency Fund. (2021). *The State of Food Security and Nutrition in The World: Transforming food systems for food security, improved nutrition, and affordable healthy diets*. Rome. FAO. https://openknowledge.fao.org/handle/20.500.14283/cb4474en

Wang, Y. C., Jia Hsu, C., & Cai, D. (2022). Effect of food nutrition labels on the health awareness of school-age children. *BMC Public Health,* 22,1249. https://doi.org/10.1186/s12889-022-13613-y.

[WHO] World Health Organization. (2022, June 10). Reformulation of food and beverage products for healthier diets. *Policy Brief*. https://iris.who.int/bitstream/handle/10665/355755/9789240039919-eng.pdf?sequence=1.

Wulandari, A., & Sampouw, C.P. (2020). Proses pengambilan keputusan dalam Situs belanja online "Shopee" sebagai pemenuhan kebutuhan konsumen. *Journal of Media and Communication Science, 3*(2), 58-69. https://doi.org/10.29303/jcommsci.v3i2.68