PERCEPTION AND HABITS OF ULTRAPROCESSED FOOD CONSUMPTION ON THE RISK OF OBESITY IN GENERATION Z

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ABSTRACT

Introduction: Consumption of ultraprocessed food (UPF) continues to increase, especially among Generation Z, who grew up in the digital era with massive exposure to food advertising. This article reviews the relationship between perceptions of ultraprocessed food, consumption habits, and the risk of obesity in Generation Z. **Purpose:** This study was conducted using a narrative review method to explain the impact of the interaction between psychosocial factors and digital marketing on the food preferences of the younger generation, as well as the implications for public health. **Methods:** The thematic analysis approach was used to provide a deeper understanding of this phenomenon. **Discussion:** The results of the study indicate that the habit of consuming ultraprocessed food can increase the risk of obesity in Generation Z. **Conclusion:** Positive perceptions and high UPF consumption habits among Generation Z are significant factors in the increased risk of obesity. The influence of digital marketing and social pressure reinforce this consumption pattern. Community-based interventions and strict advertising regulations are needed to reduce the prevalence of obesity in young people.

INTRODUCTION

Ultraprocessed food (UPF) includes products that go through various stages of industrial processing and often contain additives such as dyes, preservatives, and flavor enhancers. UPF consumption has increased significantly in the last two decades, especially in developing countries (Baker et al., 2020). Generation Z (born between 1997-2012) is the main target because their consumption patterns are heavily influenced by social media and technology and a practical lifestyle (Azmi, 2024; Garai-Fodor, 2021). Global data showed that more than 50% of calories consumed by Generation Z in developed countries come from UPF, and the prevalence of obesity in this group has increased from 12% in 2000 to 18% in 2020 (FAO, 2022). In Indonesia, data from the 2018 Basic Health Research showed that the prevalence of obesity in adolescents aged 15-19 years reached 13.6%, which was mostly associated with the consumption of fast food and sweetened drinks (Ministry of Health, 2019). According to the NOVA classification system, ultra-processed food products include mass-produced packaged bread, carbonated soft drinks, confectionery, cookies, cereals, flavored yoghurts, and canned meat products (Steele et al., 2016).

Previous studies have shown that UPF consumption not only affects body weight but also increases the risk of chronic diseases such as type 2 diabetes and cardiovascular disease. High levels of ultra-processed food intake are correlated with low diet quality and overweight nutritional status (Setyaningsih et al., 2024). On the other hand, the existing literature still lacks discussion of psychosocial perceptions and the influence of digital marketing in shaping consumption habits in Generation Z. Therefore, this article aims to fill this knowledge gap, while providing relevant intervention recommendations.

Exploration of Generation Z's perceptions of UPF, including psychosocial factors such as peer pressure, and the influence of digital marketing in shaping their eating habits has not been widely studied. This study offers a new perspective by linking perceptions of UPF with consumption decisions and obesity risk. The purpose of writing this scientific article is to review the relationship between perceptions of ultraprocessed foods, their consumption habits, and the risk of obesity in Generation Z.

non-communicable diseases that become a health problem in Indonesia and even in the world is Diabetes Mellitus (DM). The incidence and prevalence of the disease continue to increase especially in developing countries and countries that have entered a culture of industrialization (Arisman, 2013). It is estimated that there are 463 million people in the world in 2019 (aged 20 – 79 years) or equivalent to the prevalence rate of 9.3% of the total population at the same age. As the population ages, the prevalence of the disease is expected to increase to 19.9% or 111.2 million people by the age of 65 – 79 years and will continue to increase to reach 578 million in 2030 and 700 million in 2045 (International Diabetes Federation, 2019). In Indonesia, almost all provinces except East Nusa Tenggara showed an increase in prevalence from 2013 to 2018. Yogyakarta, DKI Jakarta, North Sulawesi, and East Kalimantan became the provinces with the highest prevalence in 2013 and 2018 (R&D Agency; Ministry of Health, 2019).

METHOD
This study was conducted using a narrative review method to identify, evaluate, and analyze literature related to UPF consumption, perceptions of UPF, and its relationship to obesity in Generation Z. A structured literature search from databases such as PubMed, Scopus, and Google Scholar was used to search for articles with the keywords "ultraprocessed food," "Generation Z," "obesity," and "dietary habits."

The selected literature was limited to articles published between 2018-2023, in English or Indonesian, and relevant to the research topic were included. Articles that did not provide empirical data or focused on non-Generation Z populations were excluded. Relevant articles were evaluated to extract data on perceptions, consumption habits, health impacts, and biological mechanisms related to obesity. The analysis was conducted using a narrative approach to synthesize findings from various literatures. The collected data were analyzed descriptively to identify patterns of relationships between perceptions, consumption habits, and obesity risk in Generation Z.

RESULT AND DISCUSSION
Perceptions of Ultraprocessed Foods
Most studies showed that Generation Z considers UPFs as a convenient and affordable food option. However, only a small percentage are aware of their negative health impacts. Social media exposure plays a major role in shaping this perception, with attractive advertisements and influencer promotions creating a positive image of UPFs. Participants with the highest income and education levels were more likely to report that they were aware of and avoided consuming UPFs. Generation Z also tends to choose UPFs due to the ease of access to them. For example, a study found that 70% of adolescents associated UPFs with a modern lifestyle and convenience, despite knowing that their nutritional content is poor (Kucharczuk et al., 2022). This suggests a dissonance between nutritional awareness and consumption preferences driven by social and emotional factors. Previous research has shown that most participants (73%) are aware of the term UPF and 58% reported that their food choices are determined by whether or not they believe a food is overly processed (Robinson et al., 2024).

These perceptions are also influenced by cultural and social norms that develop in urban communities. For example, UPF is often seen as a symbol of modernity and economic success, especially among young people who want to show their social status through a consumerist lifestyle (Vignola et

al., 2021).

Digital marketing, especially through platforms such as Instagram and TikTok, plays a major role in shaping positive perceptions of UPF. Marketing campaigns that use influencers with healthy lifestyles but promote UPF products create cognitive dissonance, which makes it difficult for respondents to realize the risks of consumption.

Ultraprocessed Food Consumption Habits

Ultraprocessed food consumption habits among Generation Z have developed along with changes in modern lifestyles that increasingly prioritize practicality. Urbanization has contributed greatly to this eating pattern, especially through the availability of food delivery services and the increasing presence of fast food restaurants in urban areas. In addition, limited time to cook at home due to academic or work demands makes UPF a practical solution that is often chosen. These UPF foods are easier to prepare and have many attractive choices (Monteiro et al., 2013).

The influence of social media is also significant in driving this habit. Generation Z is highly exposed to digital marketing campaigns that promote UPF as part of a modern lifestyle. These advertisements often target emotions and social needs, such as companionship or comfort, which makes UPF seem more attractive than healthy foods (Ghosh-Jerath et al., 2024). Thus, these consumption habits are influenced not only by practical needs but also by social norms formed through digital media. Other studies have also shown that this generation is highly influenced by social norms formed through digital media (Gomes et al., 2024). For example, advertising campaigns that highlight "comfort food" often obscure the health risks associated with UPF. 60% of respondents reported consuming UPF more than three times a week (Kemenkes, 2019). 50.3% of University of Indonesia students consume UPF at a high level (Vashtianada, 2023). This pattern is supported by easy access to food delivery services (Vandevijvere et al., 2019).

Sociodemographic factors, such as geographic location of residence, have been shown to have a significant influence on UPF consumption patterns and have been associated with an increased risk of being underweight (Kamanga et al., 2024).

Health Impacts of Ultraprocessed Food Consumption

UPF consumption not only increases the risk of obesity but also other chronic diseases such as type 2 diabetes and cardiovascular disease. The impact of UPF consumption on metabolic health parameters can be grouped into: metabolic syndrome; weight change and obesity indicators; blood pressure and hypertension; glucose profile, insulin resistance and type 2 diabetes; other metabolic risks and cardiovascular disease and mortality (Costa de Miranda et al., 2021). The high content of sugar, salt and trans fats in UPF causes high blood pressure, insulin resistance and systemic inflammation. Repeated spikes in blood sugar levels due to UPF consumption also have a negative impact on body metabolism, especially in the regulation of hunger hormones (ghrelin) and satiety (leptin) (Galdino-silva et al., 2024).

High UPF consumption reduces the quality of the gut microbiota, which is important for metabolic health (Brown et al., 2022). This microbiota imbalance increases the risk of chronic inflammation and body fat accumulation, which are major factors in obesity. Energy consumption was significantly higher during UPF consumption with higher fat and carbohydrate intake (Aramburu et al., 2024).

The results showed a significant relationship between the frequency of UPF consumption and the risk of obesity (Fedde et al., 2024). Respondents who consumed UPF more than three times a week were 2.5 times more likely to be obese than those who rarely consumed UPF. One of the underlying biological mechanisms is the high calorie and added sugar content in UPF, which can lead to energy surplus and

weight gain. UPF also has a low fiber content. Processed food addiction is estimated to occur in 14% of adults and 12% of children and is associated with biopsychological mechanisms of addiction and significant clinical problems (Gearhardt et al., 2023).

In addition, UPF consumption also affects the body's metabolism. UPF tends to have a high glycemic index, which triggers rapid spikes in blood sugar levels. This is followed by increased insulin production, which if it occurs continuously can lead to insulin resistance—a major risk factor for obesity and type 2 diabetes (Almarshad et al., 2022; Basile et al., 2022).

Regulation of hunger hormones (ghrelin) and satiety (leptin) is also disrupted by UPF consumption. Studies show that UPF is often less satisfying than natural foods, so individuals tend to consume more to achieve satiety. In addition, the low fiber content in UPF reduces the duration of satiety after eating, which ultimately increases total calorie intake. Foods with low fiber content will increase the speed of the digestive process, causing you to feel hungry again more quickly (Moradi et al., 2021).

The content of additives, such as preservatives and flavor enhancers, in UPF also has the potential to affect the gut microbiota, which plays an important role in weight regulation. In addition to being high in fat and sugar, UPF products contain additional preservatives such as sodium contained in cereal products. High sodium content and if consumed too often can cause high blood pressure (Pamelia, 2018). Microbiota imbalance due to UPF consumption can increase systemic inflammation, which contributes to fat accumulation and obesity (Fernandes et al., 2023).

Psychosocial Impact and Intervention Strategies

Higher consumption of ultra-processed foods is associated with poorer physical health, especially among women, people with unhealthy lifestyles, and low socioeconomic conditions (Costa de Miranda et al., 2021). Social, cultural, and geographic influences on UPF intake, and how barriers to reducing UPF intake and accessing UPFs may vary across sociodemographic populations in each country (Dicken et al., 2023).

Consumption of UPF foods not only contributes to obesity, but also has an impact on other serious health risks, such as cardiovascular disease and type 2 diabetes (Costa de Miranda et al., 2021). Many factors drive individuals to decide to consume UPF foods, such as ease of obtaining, relatively low price, practicality, abundant supply, abundant advertising information, limited health knowledge, availability of dishes by family and encouragement from friends. Government regulation factors are the main factors for regulating the composition related to food safety aspects. However, nutritional content and food safety aspects are the main controls in limiting UPF consumption. Peer pressure and social norms also influence consumption habits (Vashtianada, 2023). Respondents who often consume UPF with friends tend to ignore the health impacts, even though they are aware of the risks. Therefore, community-based interventions involving peer educators can be an effective strategy to reduce UPF consumption. Interdisciplinary interventions with a motivational approach can reduce the consumption of ultra-processed foods, leading to positive changes in diet quality (Walker et al., 2022). Behavioral interventions to reduce UPF intake are well received and can be successful despite food environment barriers (Hagerman et al., 2024). Other psychosocial impacts include decreased emotional well-being due to negative body image often experienced by those who are obese (Pereira et al., 2024). Public education through social media about the dangers of UPF consumption and the importance of balanced nutrition can change the perception of Generation Z. Stricter advertising regulations are needed to minimize the negative influence of UPF promotions on the younger generation. Digital-based, engaging health campaigns can be an effective alternative to promote healthy eating habits. Mothers with higher

levels of education have better access to quality food and adequate nutritional information and guidance, which can result in more effective care for their children's health (Machado-Rodrigues et al., 2024).

In addition, the integration of nutrition education into the school curriculum can help Generation Z understand the negative impacts of UPFs and encourage them to make healthier food choices. The results of this study indicate the need for stricter regulation of UPF advertising on social media (Santana et al., 2020). In addition, attractive and digital-based nutrition education campaigns can be used to raise awareness among Generation Z about the health risks of UPF consumption.

CONCLUSION

Positive perceptions and high UPF consumption habits among Generation Z are significant factors in the increased risk of obesity. The influence of digital marketing and social pressure reinforce this consumption pattern. Community-based interventions and strict advertising regulations are needed to reduce the prevalence of obesity in young people. This study makes a significant contribution to the understanding of the role of perceptions and consumption habits in community nutrition issues.

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