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The Relationship between Menu Anxiety, Food Preference, Eating Habits, and the Nutritional Status of Generation Z in Cinere, Depok

Hubungan Menu Anxiety, *Pemilihan Makanan, dan Kebiasaan Makan pada Status Gizi Generasi Z di Cinere, Depok*

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ABSTRACT

Background: Generation Z is driving modern shopping trends influenced by technology. One of the emerging phenomena is Menu anxiety, which is described as the feeling of anxiety in choosing food. This condition can potentially lead to suboptimal nutritional intake, affecting the nutritional status.
Objectives: The present study aimed to analyze the relationship between anxiety menu, food selection, eating habits, and the nutritional status of Generation Z in Cinere area, Depok.
Methods: It used a cross-sectional research design with 90 Generation Z subjects aged 16-18 years at Dian Didaktika Islamic Private High School (SMAS), Cinere, Depok. The data collected included subject characteristics, Eating habits, and eating patterns based on the Food Frequency Questionnaire (FFQ). Weight and height were measured directly. A bivariate test was used with Spearman Rank.
Results: As many as 65.5% of subjects experienced menu anxiety, with 86.2% choosing a menu based on taste. The main reasons for difficulty in choosing a menu were fear of regret (41.4%) and menu choices (26.4%). Subjects consumed fruits (46.0%) and vegetables (40.2%) about 2-4 days/week, and had good nutritional status. There was a relationship between the frequency of eating out and the nutritional status of the subject based on the Body Mass Index by age (BMI/A) (p-value=0.019, r=0.252), but there was no significant relationship between the habit of eating fruit, vegetables, sweet snacks and sweet drinks and the nutritional status (p-value>0.05).
Conclusions: Eating out habits are related to nutritional status. Menu anxiety, consideration in food selection, and consumption of fruits, vegetables, sweet snacks, and sweet drinks do not have any relationship with nutritional status.

INTRODUCTION

The triple burden of malnutrition encompasses three significant nutritional issues concurrently arising within a population: malnutrition, overnutrition, and micronutrient deficiencies, including anemia[1]. Generation Z frequently experiences nutritional issues such as chronic energy deficiency (CED), underweight, obesity, and anemia[2]. According to research, 20% or 7.6 million schoolchildren, 14.8% or about 3.3 million teenagers, and 35.5% or 64.4 million adults are classified as overweight or obese[3]. Furthermore, the 2018 Riskesdas indicated that 8.7% of adolescents aged 13-15 years and 8.1% of those aged 16-18 years were within the thin or extremely thin classification. The incidence of central obesity among those aged 15-24 in West Java was 14.07%. The Body Mass Index (BMI) indicates that obesity is 14.21% in males and 32.21% in women. The prevalence of thin nutritional status among men aged 19 was documented at 27.84%, whereas for women it was 13.89%. Those percentages declined in the 20-24 age demographic, with 20.30% of males and 14.40% of females.

Generation Z is a cohort immersed in advanced technology, including the internet, mobile devices, and social media, from early life[5]. It encompasses individuals born from 1997 to 2012 and raised in a perpetually dynamic technological environment[6]. In 2024, Generation Z comprises individuals aged 12 to 27 years. The Ministry of Health categorizes this age group as teenagers (10-19 years) and young adults (19-44 years)[7]. According to data from the Central Statistics Agency (BPS) in 2020, Generation Z constituted 27.94% of Indonesia's overall population, with 71,509,082 female individuals[8].

Generation Z is a cohort of future customers poised to define emerging buying trends[9], including dietary preferences with a significant potential to impact food perceptions[10]. Gen Z's food selection features include prioritizing mental and physical wellness, favoring convenient online ordering, enjoying snacking, influenced by social media and influencers, and exhibiting significant concern for environmental sustainability

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issues[11,12]. Furthermore, their limited interest and culinary skills render the practice of eating out more prevalent[13]. Generation Z, characterized by technological proficiency, experiences adverse impacts from excessive internet usage, including diminished physical activity, detrimental nutritional habits, psychological instability, and low-stress management capabilities[14]. Overall, Generation Z has less interest in nutritious dietary habits, favoring food that offers a delectable flavor and an enjoyable dining experience. This is a factor that renders Gen Z vulnerable to future diseases[15]. Up to 86% of Generation Z in the UK suffer from menu anxiety, which is characterized by apprehension in selecting meal options due to factors such as pricing, the fear of regretting their choices, and the unavailability of preferred items[16]. Researchers aim to investigate the correlation between menu anxiety, meal selection, eating habits, and the nutritional status of Generation Z in Cinere, Depok. No research has been conducted on Gen Z concerning menu anxiety, meal choices, and eating behaviors about nutritional status. This study aimed to ascertain the correlation between menu anxiety, meal selection, eating behaviors, and the nutritional status of Generation Z in Cinere, Depok.

METHODS

This research employs a quantitative approach with an observational analytical framework utilizing a cross-sectional study design. The acquisition of subject data has been granted ethical permission by the Health Research Ethics Committee of Universitas Prima Indonesia, reference No. 069/KEPK/UNPRI/IV/2024, dated April 24, 2024. This study was conducted from February to June 2024 at Dian Didaktika Islamic Private High School (SMAS) in Cinere District, Depok City, West Java, and its vicinity namely in RW 03. The participants in this study were selected by a nonprobability sampling method, namely purposively, according to the established inclusion and exclusion criteria set by the researcher. The established inclusion criteria mandated that participants attended Dian Didaktika Islamic Senior High School, resided in proximity to the institution, consented to participate in the research, completed the informed consent form, were aged between 12 and 27 years, possessed both physical and mental health, engaged in a series of studies, and demonstrated proficiency in verbal and written communication. The exclusion criteria established were those who were absent during the study and individuals who withdrew from the study. This research involved 87 subjects from Generation Z, aged 16 to 18 years, calculated using the Lemeshow formula (1997), with an allowance for a 10% dropout or follow-up loss rate.

Data collection encompasses primary data acquired directly by researchers, including subject characteristics, dietary habits derived from the Food Frequency Questionnaire (FFQ) and 3x24-hour dietary recalls, as well as lifestyle information obtained from questionnaires in prior studies. These questionnaires address various aspects, such as the frequency of eating out/hanging out/eating outside the home, the price of food usually purchased, the frequency of utilizing online food delivery services, and the applications employed for online food delivery[17,18]. The nutritional condition of the subjects was assessed using body weight measurements obtained from a digital scale with an accuracy of 0.1 kg and height measurements taken with a microtoise with an accuracy of 0.1 cm. Data on eating habits, encompassing menu anxiety, food preferences, and dietary practices, were derived from adaptations of prior surveys[19]. Dietary patterns were acquired through direct interviews employing a 3x24-hour recall questionnaire (two weekdays and one weekend). Menu anxiety refers to the apprehension associated with selecting a food menu. Inquiries on menu anxiety were conducted by asking participants if they had ever encountered menu anxiety when selecting a food menu, and responses were classified as affirmative or negative.

The validity testing in this study was performed with the SPSS 26 for Windows software. A question item is considered valid if the p-value is ≤0.05 or if the r value of the analysis exceeds the r table value. Validity and reliability assessments were performed online with 28 participants, utilizing 6 questions concerning the anxiety menu and the frequency of chocolate consumption among individuals. Reliability testing was performed to demonstrate the consistency of a questionnaire across time. Reliability denotes consistency, stability, precision, and predictive capability[20]. The reliability test was assessed using Cronbach's alpha method; a p-value of ≥ 0.6 indicates that the variable is reliable. The reliability test findings from 28 subjects yielded a Cronbach's alpha of 0.752, indicating that the questionnaire utilized in this study is reliable.

The gathered data is subsequently processed and evaluated through multiple phases of data processing. Nutritional status is classified using the Body Mass Index for Age (BMI/A) into malnutrition (<-3SD), undernutrition (-3SD to <-2SD), good nutrition (-2SD to +1SD), overnutrition (+1SD to +2SD), and obesity (>+2SD). The menu anxiety category is divided into affirmative and negative options. Determination is contingent upon the tension encountered by the individual when selecting food. Factors in food selection are classified into five (5) categories: appealing presentation, flavor preference, preparation time, cost-effectiveness, and environmental impact. The challenges in selecting a menu are classified into six (6) categories: anxiety in communicating with the waiter to place an order, prohibitive pricing, an overwhelming number of menu options, apprehension about regretting the choice, difficulty in articulating the name of the dish, and no preferred menu.

This study utilized IBM SPSS Statistics 20 and Microsoft Excel 2016 for data analysis. The data underwent univariate analysis for each variable examined in this study, encompassing a description of the frequency distribution of all variables, which is shown in a frequency distribution table. Furthermore, bivariate analysis was used to ascertain the association between independent and dependent variables in this study. Bivariate analysis was conducted with the Spearman Rank correlation test as the data is an ordinal variable scale. The assessment of significance was carried out specifically with a p-value of 0.05.

RESULTS AND DISCUSSIONS

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Subject characteristics are significant variables in the research. The characteristics of the researched participants encompass various variables, specifically gender, highest level of education, daily allowance, and nutritional health as assessed by the Body Mass Index relative to age (BMI/A). This research encompassed 87 participants from Dian Didaktika Islamic Senior High School. The characteristics and status of the patients are presented in Table 1 below.

Table 1. Frequency of characteristics and nutritional status of subjects

Characteristics	Frequency	
	n	%
Gender		
Male	45	51.7
Female	42	48.3
Last education		
Junior High School	86	98.9
Senior High School	1	1.1
Daily Pocket Money		
IDR 10,000-50,000	31	35.6
IDR 50,000-100,000	37	42.5
IDR 100,000-150,000	5	5.7
> IDR 150,000	14	16.1
Nutritional Status (BMI/A)		
Malnutrition	0	0.0
Undernutrition	3	3.4
Good nutrition	52	59.8
Overnutrition	19	21.8
Obesity	13	14.9

Description: BMI/A = Body Mass Index by Age

This study yielded 87 participants that satisfied the inclusion and exclusion criteria. The gender distribution of subjects consisted of 45 males (51.7%) and 42 females (48.3%). The predominant educational attainment among the participants in this study was senior high school, with 87 subjects (98.9%). The pocket money arranged from the greatest to the smallest as follows: IDR 50,000-IDR 100,000 comprises 37 subjects (42.5%), IDR 10,000-IDR 50,000 includes 31 subjects (35.6%), the range beyond IDR 150,000 has 14 subjects (16.1%), and IDR 100,000-IDR 150,000 encompasses 12 subjects (11.2%). Education significantly influences an individual's nutritional quality, as enhanced education fosters improved knowledge, particularly concerning nutrition and health[21]. The equilibrium of nutrient consumption necessary for the body's metabolic functions can influence the attainment of optimal nutritional status. The assessment of individual nutritional status can be conducted through many indicators[22]. This study employs Body Mass Index by Age (BMI/A) as a measure of nutritional status. The Body Mass Index by Age (BMI/A) indicator is utilized to evaluate the increase in body mass index over the growth phase, specifically for individuals aged 5 to 18 years[23].

The study results in Table 1 indicate that the majority of subjects exhibit good nutritional state, with 52 individuals (59.8%) categorized as having good nutrition based on BMI/A indices. An adequate nutritional status signifies a balanced dietary intake that meets the body's requirements for food and beverages. Individuals with inadequate nutritional status are more vulnerable to infectious diseases, whereas those with excessive nutritional status have a heightened risk of degenerative diseases. Consequently, each person must ascertain their nutritional intake according to the principle of balanced nutrition to fulfill daily dietary requirements.

Eating habits are recurrent behaviors associated with an individual's food consumption, encompassing several elements such as attitudes, beliefs, and food selection criteria[24]. Variables related to eating habits include menu anxiety, factors influencing menu selection, reasons for challenges in menu choice, and the consumption of fruits, vegetables, sugary snacks, and sugar-sweetened beverages. The findings of a survey regarding the dietary habits of Generation Z in Cinere, Depok, derived from questionnaire responses, are as follows:

Table 2. Frequency of Gen Z eating habits

Eating Habits	Frequency	
	n	%
Menu Anxiety		
Yes	57	65.5
No	30	34.5
Total	87	100.0
Considerations in Menu Selection		
Attractive presentation	7	8.0
Like the taste of the menu	75	86.2

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Eating Habits	Frequency	
	n	%
Affordable prices	5	5.7
Total	87	100.0
The Challenges in Selecting a Menu		
Anxiety in communicating with the waiter to place an order	9	10.3
Prohibitive pricing	9	10.3
Overwhelming number of menu options	23	26.4
Apprehension about regretting the choice	36	41.4
Difficulty in articulating the name of the dish	1	1.1
No preferred menu exists	9	10.3
Total	87	100.0
Fruit Consumption		
Never	4	4.6
<1 time/week	6	6.9
1 time/week	14	16.1
2-4 times/week	40	46.0
5-6 times/week	7	8.0
1 time/day	12	13.8
>1 time/day	4	4.6
Total	87	100.0
Vegetable Consumption		
Never	3	3.4
<1 time/week	6	6.9
1 time/week	15	17.2
2-4 times/week	33	37.9
5-6 times/week	11	12.6
1 time/day	13	14.9
>1 time/day	6	6.9
Total	87	100.0
Consumption of Sugary Snack Foods		
Never	1	1.1
<1 time/week	10	11.5
1 time/week	12	13.8
2-4 times/week	39	44.8
5-6 times/week	13	14.9
1 time/day	8	9.2
>1 time/day	4	4.6
Total	87	100.0
Consumption of Soft Drinks/Sugar-Containing Beverages		
Never	4	4.6
<1 time/week	13	14.9
1 time/week	15	17.2
2-4 times/week	35	40.2
5-6 times/week	11	12.6
1 time/day	6	6.9
>1 time/day	3	3.4
Total	87	100.0

Table 2 indicates that 57 participants (65.5%) feel menu anxiety. The data aligns with prior research conducted in England, which indicated that 86% of Gen Z suffer menu anxiety[16]. Gen Z's criteria for selecting food menus include the taste of the menu (86.2%), affordable prices (5.7%), and attractive presentation (8.0%). Gen Z experiences menu anxiety due to apprehension about regretting the choice (41.4%), an overwhelming number of menu options (26.4%), prohibitive pricing (10.3%), and no preferred menu (10.3%). According to a prior study, Generation Z prioritizes the atmosphere of restaurants and dining establishments (48.6%) as the foremost criterion, followed by price, quality, and location (34.4%), and the food provided (17%)[25].

In this research, a significant proportion of Gen Z ingested fruit 2-4 days per week at 44.8%, vegetables 2-4 days per week at 40.2%, sweet snacks 2-4 days per week at 44.8%, and sugary beverages 2-4 days per week at 40.2%. A survey conducted by Jakpat in 2023 revealed that Generation Z had the lowest daily consumption rates of fruits and vegetables among other generations, affecting 50.6% of males and 49.56% of females in this cohort consuming these foods daily. Previous research indicates that Gen Z restricts snacking, with 27.9% of this demographic munching only once a day, and a preference for sugary snacks over the millennial age. Gen Z's preferred food categories include chips (81.4%), cookies (62.9%), chocolate (60.7%), and candy (57.9%)[26].

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According to a prior study, Sugar-Sweetened Beverages (SSB) are highly favored by Gen Z, with modern tea being the most commonly drunk, occurring daily at a rate of 12.95%[27].

According to Table 3, Gen Z's frequency of eating out/hanging out/eating outside the home is 2-3 times per week (42.5%), with the typical expenditure on meals ranging from IDR 15,000 to IDR 20,000 (36.8%). This result aligns with the assertion that dining out has become a daily practice for the majority of Generation Z. Eating out encompasses not just the fulfillment of hunger and thirst but also the pursuit of enjoyment, leisure, and the desires that motivate Generation Z to engage in this activity[28].

Table 3. Frequency of eating out and food purchasing behaviors among subjects

Lifestyle	Frequency	
	n	%
Frequency of Eating Out/Hanging out/Eating outside the home		
Everyday	3	3.4
2-3 times/week	37	42.5
1 time/week	17	19.5
2-3 times/month	30	34.5
Total	87	100.0
Price of food usually purchased		
< IDR 10,000	7	8.0
IDR 15,000 – Rp 20,000	32	36.8
IDR 25,000 – Rp 30,000	22	25.3
> IDR 30,000	26	29.9
Total	87	100.0
Frequency of Use of Online Food Delivery		
Low (<9 times)	54	62.1
Medium (9-15 times)	21	24.1
High (>15 times)	12	13.8
Total	87	100.0
Online Food Delivery Application		
Go Food	75	86.2
Grab Food	10	11.5
Shopee Food	2	2.3
Total	87	100.0

According to this survey, 54 individuals (62.1%) infrequently utilized online meal delivery (<9 times), while 21 subjects (24.1%) employed it with moderate regularity (9-15 times). Generation Z perceives online food delivery as congruent with their rapid and digital lifestyle. The utilization of online meal delivery is affected by elements like usability, perceived advantages, trust, risk-benefit perceptions, and various psychological and sociocultural influences[29,30]. The predominant application utilized in this survey was Go Food, accounting for 86.2% of usage. This reinforces the assertion in other research indicating that Go Food is the most favored application among Gen Z, particularly with the dimension of trust[31].

According to Table 4, the analysis of the relationship between the anxiety menu variable and the BMI/A nutritional status variable yielded a p-value of 0.215, indicating a p-value > 0.05, which signifies the absence of a significant relationship between the menu anxiety and the BMI/A nutritional status variable. The study's results indicated that the majority of Gen Z had menu anxiety, with 57 respondents categorized as follows: 1.8% undernutrition, 57.9% good nutrition, 22.8% overnutrition, and 17.5% obesity.

The Spearman Rank correlation test study of the variables influencing menu selection in connection to nutritional status BMI/A yielded a p-value beyond 0.05, indicating the absence of a significant association between menu selection considerations and BMI/A nutritional status. This study revealed that the predominant reason for menu selection among Gen Z was taste, with 75 participants indicating this preference. The nutritional state of the subjects was categorized as follows: undernutrition at 4.0%, good nutrition at 61.3%, overnutrition at 22.7%, and obesity at 12.0%.

Table 4. The relationship between eating habits and nutritional status BMI/A, through a questionnaire

Eating Habits	Nutritional Status (BMI/A)										Total		r	p-value *
	Malnutrition		Undernutrition		Good Nutrition		Overnutrition		Obesity					
	n	%	n	%	n	%	n	%	n	%	n	%		
Menu anxiety														
Yes	0	0.0	1	1.8	33	57.9	13	22.8	10	17.5	57	100	-0.134	0.215
No	0	0.0	2	6.7	19	63.3	6	20.0	3	10.0	30	100		
Considerations in Menu Selection														

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Eating Habits	Nutritional Status (BMI/A)										Total		r	p-value *
	Malnutrition		Undernutrition		Good Nutrition		Overnutrition		Obesity					
	n	%	n	%	n	%	n	%	n	%	n	%		
Attractive presentation	0	0.0	0	0.0	5	71.4	1	14.3	1	14.3	7	100		
Like the taste of the menu	0	0.0	3	4.0	46	61.3	17	22.7	9	12.0	75	100	0.183	0.089
Affordable prices	0	0.0	0	0.0	1	20.0	1	20.0	3	60.0	5	100		
The Challenges in Selecting a Menu														
Anxiety in communicating with the waiter to place an order	0	0.0	1	11.1	5	55.6	2	22.2	1	11.1	9	100		
Prohibitive pricing	0	0.0	2	22.2	2	22.2	3	33.3	2	22.2	9	100		
Overwhelming number of menu options	0	0.0	0	0.0	11	47.8	6	26.1	6	26.1	23	100	-0.094	0.384
Apprehension about regretting the choice	0	0.0	0	0.0	28	77.8	5	13.9	3	8.3	36	100		
Difficulty in articulating the name of the dish	0	0.0	0	0.0	1	100	0	0.0	0	0.0	1	100		
No preferred menu exists	0	0.0	0	0.0	5	55.6	3	33.3	1	11.1	9	100		
Fruit consumption														
Never	0	0.0	0	0.0	1	25.0	3	75.0	0	0.0	4	100		
<1 time/week	0	0.0	1	16.7	4	66.7	1	16.7	0	0.0	6	100		
1 time/ week	0	0.0	0	0.0	11	78.6	2	14.3	1	7.1	14	100		
2-4 times/ week	0	0.0	2	5.0	19	47.5	11	27.5	8	20.0	40	100	0.022	0.840
5-6 times/ week	0	0.0	0	0.0	5	71.4	0	0.0	2	28.6	7	100		
1 time/day	0	0.0	0	0.0	9	75.0	1	8.3	2	16.7	12	100		
>1 time/day	0	0.0	0	0.0	3	75.0	1	25.0	0	0.0	4	100		
Vegetable Consumption														
Never	0	0.0	0	0.0	1	33.3	1	33.3	1	33.3	3	100		
<1 time/week	0	0.0	1	16.7	3	50.0	1	16.7	1	16.7	6	100		
1 time/week	0	0.0	1	6.7	9	60.0	5	33.3	0	0.0	15	100		
2-4 times/ week	0	0.0	1	3.0	20	60.6	8	24.2	4	12.1	33	100	0.067	0.536
5-6 times/ week	0	0.0	0	0.0	7	63.6	1	9.1	3	27.3	11	100		
1 time/day	0	0.0	0	0.0	9	69.2	1	7.7	3	23.1	13	100		
>1 time/day	0	0.0	0	0.0	3	50.0	2	33.3	1	16.7	6	100		
Consumption of Sugary Snack Foods														
Never	0	0.0	0	0.0	0	0.0	1	100	0	0.0	1	100		
<1 time/week	0	0.0	0	0.0	5	50.0	3	30.0	2	20.0	10	100		
1 time/week	0	0.0	0	0.0	8	66.7	3	25.0	1	8.3	12	100		
2-4 times/ week	0	0.0	1	2.6	22	56.4	9	23.1	7	17.9	39	100	-0.178	0.099
5-6 times/ week	0	0.0	2	15.4	7	53.8	2	15.4	2	15.4	13	100		
1 time/day	0	0.0	0	0.0	6	75.0	1	12.5	1	12.5	8	100		
>1 time/day	0	0.0	0	0.0	4	100	0	0.0	0	0.0	4	100		
Consumption of Soft Drinks/Sugar-Containing Beverages														

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Eating Habits	Nutritional Status (BMI/A)										Total		r	p-value *
	Malnutrition		Undernutrition		Good Nutrition		Overnutrition		Obesity					
	n	%	n	%	n	%	n	%	n	%	n	%		
Never	0	0.0	0	0.0	0	0.0	2	50.0	2	50.0	4	100	-0.094	0.388
<1 time/week	0	0.0	0	0.0	10	76.9	2	15.4	1	7.7	13	100		
1 time/week	0	0.0	1	6.7	10	66.7	2	13.3	2	13.3	15	100		
2-4 times/ week	0	0.0	0	0.0	19	54.3	11	31.4	5	14.3	35	100		
5-6 times/ week	0	0.0	1	9.1	7	63.6	2	18.2	1	9.1	11	100		
1 time/day	0	0.0	1	16.7	4	66.7	0	0.0	1	16.7	6	100		
>1 time/day	0	0.0	0	0.0	2	66.7	0	0.0	1	33.3	3	100		

Description: BMI/A = Body Mass Index by Age; *Spearman Rank Correlation Test, significant p-value<0.05

Table 4 indicates that there is no correlation between menu selection difficulties, fruit consumption, vegetable consumption, sweet snack consumption, and the intake of sugary beverages with the nutritional status variable (p-value>0.05). No prior studies have directly examined the association between menu anxiety and nutritional status. The performed studies primarily examine menu anxiety in Generation Z, neglecting to establish its correlation with nutritional health. A prior study from the UK indicated that 86% of Gen Z encountered menu anxiety, mostly instigated by variables including meal pricing, challenges in selecting preferred items, apprehension about potential regret post-selection, and an overwhelming number of menu options. Furthermore, the study indicated that 38% of Generation Z and millennials were hesitant to dine at a restaurant without prior examination of the menu. Approximately one-third of Generation Z depends on others to place their food orders due to elevated anxiety levels[16]. This study aims to address the knowledge gap by examining the correlation between menu anxiety and nutritional health in Generation Z. Nutritional status is also affected by several factors beyond diet, such as physical activity patterns and individual health conditions.

According to Table 5, the Spearman rank correlation test results for the frequency of eating out/hanging out/eating outside the home and nutritional status (BMI/A) yielded a p-value of 0.019, indicating statistical significance (p<0.05), and an r-value of 0.252, demonstrating a significant positive correlation between the frequency of eating out/hanging out/eating outside the home and nutritional status (BMI/A). This study revealed that the majority of Gen Z dine out or socialize outside the home 2-3 times per week (37 individuals), with malnutrition at 5.4%, good nutrition at 67.6%, overnutrition at 16.2%, and obesity at 10.8%. Research on children aged 6-17 years in China indicated a correlation between the frequency of eating out and nutritional status in male adolescents, however, no such correlation was seen in female adolescents[32]. This study revealed that the majority of Generation Z possesses a favorable nutritional state and belongs to the middle to upper-income strata. This conclusion contrasts with earlier studies indicating that the prevalence of obesity and overweight is greater among children from high-income families[32,33]. This research suggests that various factors can affect an individual's nutritional health, including heredity, variations in physical activity levels, distinct lifestyles, and socio-economic conditions.

Table 5. Relationship between lifestyle and nutritional status BMI/A

Gaya Hidup	Nutritional Status (BMI/A)										Total		R	p-value
	Malnutrition		Undernutrition		Good Nutrition		Overnutrition		Obesity					
	n	%	n	%	n	%	n	%	n	%	n	%		
Frequency of Eating Out/Hanging out/Eating outside the home														
Everyday	0	0.0	0	0.0	3	100	0	0.0	0	0.0	3	100	0,252	0.019 *
2-3 times /week	0	0.0	2	5.4	25	67.6	6	16.2	4	10.8	37	100		
1 time /week	0	0.0	0	0.0	10	58.8	6	35.3	1	5.9	17	100		
2-3 times /month	0	0.0	1	3.3	14	46.7	7	23.3	8	26.7	30	100		
Price of food usually purchased														
< Rp 10.000	0	0.0	0	0.0	3	42.9	2	28.6	2	28.6	7	100	-0.120	0.267
Rp 15.000 – Rp 20.000	0	0.0	2	6.3	17	53.1	8	25.0	5	15.6	32	100		
Rp 25.000 – Rp 30.000	0	0.0	1	4.5	13	59.1	6	27.3	2	9.1	22	100		

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Gaya Hidup	Nutritional Status (BMI/A)												R	p-value
	Malnutrition		Undernutrition		Good Nutrition		Overnutrition		Obesity		Total			
	n	%	n	%	n	%	n	%	n	%	n	%		
> Rp 30.000	0	0.0	0	0.0	19	73.1	3	11.5	4	15.4	26	100		
Frequency of Use of Online Food Delivery														
Low (<9 times)	0	0.0	3	5.6	30	55.6	12	22.2	9	16.7	54	100		
Medium (9-15 times)	0	0.0	0	0.0	14	66.7	4	19.0	3	14.3	21	100	0.028	0.797
High (>15 times)	0	0.0	0	0.0	8	66.7	3	25.0	1	8.3	12	100		

Description: BMI/A = Body Mass Index by Age; * Spearman Rank Correlation Test, significant p-value<0.05

The bivariate analysis of the relationship between the price of commonly purchased food and nutritional status, as measured by BMI/A, yielded a p-value of 0.267, indicating no significant correlation as p-value > 0.05. This study's results indicated that the majority of Gen Z purchased food within the price range of IDR 15,000 - IDR 20,000 (32 subjects), with malnutrition at 6.3%, good nutrition at 53.1%, overnutrition at 25.0%, and obesity at 15.6%. These results are inconsistent with prior studies indicating a substantial impact of food prices on nutrition and the mitigation of stunting[34]. Prior research indicated a positive correlation between the nutritional content of food and its price[35]. For individuals in lower middle economic strata, money is regarded as a significant impediment to embracing a better diet. This survey revealed that the majority of Gen Z exhibited favorable nutritional status, with most individuals bringing meals from home, resulting in their purchases being primarily restricted to snacks or supplementary food items. This circumstance may contribute to the absence of a discernible association between food prices and nutritional status as indicated by the BMI/A score.

The Spearman rank correlation test results indicated a p-value of 0.797, exceeding the threshold of 0.05, thereby demonstrating no significant relationship between the frequency of online food delivery usage and the nutritional status variable BMI/A. This study revealed that the majority of Gen Z utilized online meal delivery 9 times (54 respondents), with 5.6% classified as undernutrition, 55.6% as good nutrition, 22.2% as overnutrition, and 16.7% as obesity. These findings align with other research indicating no correlation between the practice of eating out through online meal delivery and overweight or obesity[36,37]. This study indicates that the majority of Gen Z fall within the normal nutritional status group; however, it is crucial to consider food selections when utilizing online food delivery services. The study is currently confined to a single site with adolescent participants. So, it is imperative to broaden both the research location and the age range of the subjects.

CONCLUSIONS

Most participants had menu anxiety, mostly influenced by their preference for the taste of the options. Additionally, many individuals struggled with menu selection due to the fear of regret and the overwhelming number of choices available. Subjects regularly consumed fruit and vegetables 2-4 times each week. The majority of individuals exhibited favorable nutritional conditions. The frequency of eating out was associated with nutritional status (BMI/A). No correlation existed between the consumption of fruit, vegetables, sweet snacks, and sugary beverages and the nutritional status of Generation Z.

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AUTHOR CONTRIBUTIONS

KA: conceptualization, investigation, methodology, supervision, writing–original draft, writing–review and editing; FSP: methodology, writing–original draft; DHM: conceptualization, methodology, writing–review.

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