International Journal of Public Health Science (IJPHS)
Vol. 15, No. 2, June 2026, pp. 322~329
ISSN: 2252-8806, DOI: 10.11591/ijphs.v15i2.26997

Behavioral intentions to stop consuming risky foods related to degenerative diseases among Indonesian university students: a descriptive study

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Article Info

Article history:

Received Jan 25, 2026
Revised Mar 17, 2026
Accepted Apr 25, 2026

Keywords:

College students
Degenerative diseases
Intentions
Risky foods
Theory of planned behaviour

ABSTRACT

Food consumption habits nowadays are diverse, particularly the many choices of processed and quick food at low prices, which, including among students, are unhealthy and unsafe, with unbalanced nutritional levels that can cause a variety of degenerative diseases. This study aimed to describe students' intentions to stop consuming risky foods, grounded in the theory of planned behaviour (TPB). This study is a quantitative descriptive study conducted with second- and fourth-semester students in the public health study program. The sample was selected using accidental sampling, resulting in 87 students participating in the questionnaire. The data were analyzed descriptively and presented in tables and narratives. The study shows that fatty meat/offal, canned foods, pickled foods, and dried sweets are consumed frequently. The non-intentional group comprised processed cheese, frozen sweets and ice cream, quick noodles, and fried foods. Among 10 dangerous foods, fried foods, processed cheese, pickles, and frozen desserts are the least likely to be substituted. Most responders were unsure of the quitting time. Students did not plan to quit unhealthy foods. Students did not have a firm intention to stop consuming hazardous foods such as processed cheese, frozen sweets, instant noodles, and fried foods.

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1. INTRODUCTION

During adolescence, a person's physical and cognitive development is of great importance. Therefore, getting proper nutrition can have a lifelong impact. Three malnutrition problems affect Indonesian teenagers: malnutrition, overweight and obesity, and micronutrient deficiencies. Modern unhealthy lifestyles among Indonesian teenagers include consuming unhealthy food and not moving much; excessive consumption of unhealthy food and drinks with lots of sugar, salt, and fat can cause disease, especially chronic disease [1]. Teenagers need to pay attention to healthy, nutritious eating, but many today do not. This can be seen from their tendency to consume junk food [2]. Based on the 2023 Indonesian Health Survey (IHS), the survey reports high daily consumption of risky foods, such as sweet, salty, and fatty foods, as well as instant and processed foods, while fruit and vegetable intake remain inadequate. The survey results also show that people consume risky foods and drinks because they taste good, are readily available, are cheaper, and are unaware of the long-term risks. One of the impacts of consuming too much risky food is overweight/obesity, as many as 23.4% of adults aged 18 years and over experience overweight/obesity

problems. The highest prevalence was in DKI Jakarta (31.8%), Papua (31.3%), North Sulawesi (30.6%), Southwest Papua (29.3%), and East Kalimantan (28%). The incidence of obesity increased by 14.8 percentage points from 10.5% in Riskerdas 2007 to 25.3% in Riskerdas 2013, but fell by 13.5 percentage points from 25.3% in Riskerdas 2013 to 11.8% in Riskerdas 2013. Followed by the prevalence of hypertension according to a doctor's diagnosis in the population aged 18 years, of 8.6% [3].

Several factors can influence risky food consumption patterns. Family, peers, environment, and economic status are among the variables that influence eating patterns. The family determines what food a child eats. Eating together as a family increases the child's appetite. A general eating pattern has three components: type, frequency, and amount. Type is the type of staple food consumed by a child every day, frequency is how many times a child eats, and quantity is the amount of food consumed in one meal. Excessive food intake from instant foods, soft drinks, and other fast foods is a cause of obesity in children. Eating habits also come from group culture, which is taught to the family [4], [5]. The WHO identifies several types of junk foods (e.g., fried foods, processed meats, instant noodles, processed cheese, frozen sweets, and fatty meats/offal), which can be foods at risk of degenerative diseases [6]. This food has no nutritional value. It contains relatively high calories, which can raise cholesterol levels. Not only because of consuming sugar, but also because of consuming fast food too often, can cause obesity and, ultimately, diabetes because it can affect the body's metabolism. The food that comes in is not adequately absorbed by the body, which prevents insulin from working properly. Other dangers posed are heart disease, kidney problems, and liver damage [7].

Research indicates that college students often engage in unhealthy dietary behaviors, with many not meeting recommendations for fruit and vegetable intake [8]. A high percentage of students save money on food, frequently visit fast-food establishments, and lack knowledge about balanced nutrition [9]. Junk food consumption among adolescents is recognized as a serious health problem, but educational interventions based on the theory of planned behavior (TPB) can effectively change intentions and attitudes toward junk food consumption [10]. A study of Brazilian health sciences students found that 75.7% had inadequate or risky dietary practices according to national guidelines, with men showing a higher frequency of risky practices and women more likely to have inadequate practices [11]. These findings highlight the need for targeted interventions to improve students' dietary habits and reduce the risk of nutrition-related health issues. risky foods such as Junk food are not only found in Western food (pizza, hamburgers, and french fries), but in Indonesia, many types of junk food are often consumed, such as fried intestine snacks, dry fried chicken skin, types of salty and sweet chips, fried food on the side of the road, its nutritional value has been reduced, sometimes almost lost. Some nutrients can change their nutritional value when processed in certain ways, such as cooking at high heat (frying or baking). These foods usually contain very high calories, sugar, salt, and fat [12].

The most influential factor in generating behavior is intention, which is also considered a direct determinant and is within a person's control. The stronger a person's intention to perform a behavior, the more likely it is to be carried out. It is hoped that the intention to eat vegetables and fruit can encourage the behavior of eating vegetables and fruit [13]. According to the theory of planned behavior, Lestarina [14] argues that a person's intentions determine whether they will engage in a given behavior. Intentions can explain the components of motivation and strongly impact behavior. A person's belief in a behavior determines their intention to engage in it. Intentions are determined by behavioral beliefs, which ultimately give rise to perceptions of positive or negative consequences and the subjective value or evaluation of those consequences. Therefore, intention is as important as motivation to do something [14].

College students are young adults entering a transitional period in which they experience increased independence across various aspects, especially in consumption patterns. Students who are far from their parents and have unhealthy lifestyles will be more intensively exposed to unhealthy food environments. Although national data describe risky food consumption among young adults, less attention has been given to college students' intentions to reduce such consumption during early adulthood. Based on the description above, the researcher aims to determine the distribution of intentions to stop consuming foods that do not comply with balanced nutrition guidelines. This study is novel in that it describes students' intentions, willingness, readiness, and timeframe for stopping consumption of risky foods, using this information as a basis for planning adolescent health promotion to prevent degenerative diseases grounded in the theory of planned behaviour.

2. METHOD

This quantitative descriptive study was conducted at Campus 3 of the Faculty of Public Health at Universitas Ahmad Dahlan. Descriptive analysis was chosen for this study to provide an initial overview of students' behavioral intentions regarding junk food consumption. The study aimed to map adolescents' intentions to stop consuming junk food in terms of willingness, readiness, and timeframe for stopping

consumption of risky foods, rather than testing causal relationships. The study population comprised second and fourth-semester students on the Public Health Study Programme. A total of 87 students who were present during data collection and agreed to participate were included in the study using accidental sampling. Data collection using a questionnaire developed from indicators of the Riset Kesehatan Dasar (RISKESDAS) on types of risky food consumption, subsequently adapted to measure students' intentions. The questionnaire consisted of questions about types of risky foods, with response options of 'yes' or 'no', followed by the intended timeframe for stopping consumption of these foods ('tomorrow', 'next week', 'next month', 'next year', or 'don't know'). Additionally, one item asked about the respondent's readiness to replace risky foods with healthier alternatives, with response options of "yes" or "no". Questionnaire content validation was conducted before data collection. The questionnaire was validated by public health experts. The data were analyzed descriptively using frequencies and percentages, and the results are presented in tables and narrative form.

3. RESULTS AND DISCUSSION

3.1. Results

Respondent characteristics obtained from the respondents' identities include gender, age, class, and semester. The distribution of respondent characteristics is presented in Table 1. This study did not aim to examine differences by gender or age; nonetheless, the overall trend suggests a limited intention across respondent characteristics. Based on Table 1, the majority of respondents were female (85.06%) and aged 20–21 years (74.71%). This suggests that most participants were in early adulthood, a typical developmental stage for university students. At this age, individuals begin to make independent decisions about lifestyle and health behaviors.

Table 1. Characteristics of respondents at campus X, Yogyakarta (n = 87)

Characteristics	n	%
Gender		
Male	13	14.94
Female	74	85.06
Age		
19 years old	10	11.49
20 years old	33	37.93
21 years old	32	36.78
22 years old	12	13.79

Based on Table 2, the readiness to stop consuming risky foods, with a frequency of ±3 times per month, indicates that the majority of students (49.43%) stated they were not willing to stop consuming processed cheese and frozen sweet treats. Followed by instant noodles, which are not much different (40.23%). Meanwhile, readiness to stop consuming foods made from fatty meat/offal is relatively high (74.71%), and canned food (73.56%). These results also show that, among the ten types of risky foods, processed cheese and frozen desserts are very popular among students, as evidenced by their low willingness to stop consuming them. This may be because, to date, many foods have been developed as daily snacks using cheese and frozen desserts, which can improve teenagers' moods when they are tired after lectures.

Table 2. Willingness to stop consuming risky foods among students on campus (n = 87)

Types of risky foods	Yes	%	No	%
Processed cheese	44	50.57	43	49.43
Frozen sweet treats (ice cream, frozen)	44	50.57	43	49.43
Instant noodles	52	59.77	35	40.23
Fried food	53	60.92	34	39.08
Grilled or baked foods	55	63.22	32	36.78
Processed meat foods	56	64.37	31	35.63
Dried sweets	57	65.52	30	34.48
Pickles	58	66.67	29	33.33
Canned food	64	73.56	23	26.44
Foods made from fatty offal meats	65	74.71	22	25.29

However, the opposite is true for fatty offal and canned foods, which show the highest willingness to stop consumption. This may be because they are considered heavy foods, lack innovation in processing,

and are less appealing. This consumption pattern shows that foods often consumed as snacks are more difficult to stop eating than those considered too heavy to eat as snacks. These findings suggest that, despite awareness of the health risks of certain foods, the convenience of these foods and their everyday consumption make it difficult for most students to give them up.

The results from Table 3 show the highest proportions of students reporting no substitutes were for fried foods (72.41%), processed cheese (71.26%), pickles (70.11%), and frozen sweet dishes (64.37%). The proportion of readiness to seek alternatives for these four types of food shows the highest proportion of no alternatives available. These findings indicate that limited access to or awareness among students of healthier alternatives may hinder their readiness to reduce consumption of high-risk foods, especially those consumed as daily snacks and readily accessible. This suggests that these particular foods are deeply embedded in students' dietary habits, making them more challenging to replace.

The lack of substitute options may also reflect a limited awareness of or access to healthier alternatives. Consequently, this could hinder efforts to reduce consumption of these high-risk foods. This suggests that these particular foods are deeply embedded in students' dietary habits, making them more challenging to replace. The lack of substitute options may also reflect a limited awareness of or access to healthier alternatives. Consequently, this could hinder efforts to reduce consumption of these high-risk foods.

Table 3. Readiness to look for substitute foods for the risky foods that have been consumed (n = 87)

Question	Yes	%	No	%
Do you have a substitute for fried food?	24	27.59	63	72.41
Do you have a substitute for processed cheese?	25	28.74	62	71.26
Do you have a substitute for pickles?	26	29.89	61	70.11
Do you have a substitute for frozen sweet treats?	31	35.63	56	64.37
Do you have a substitute for canned food?	33	37.93	54	62.07
Do you have a substitute for instant noodles?	33	37.93	54	62.07
Do you have a substitute for dry sweets?	33	37.93	54	62.07
Do you have a substitute for baked or grilled food?	35	40.23	52	59.77
Do you have a substitute for processed meat?	36	41.38	51	58.62
Do you have food substitutes for fatty meat and offal?	42	48.28	45	51.72

The research results presented in Table 4 show that 35 respondents (40.23%) stated they did not know or were unsure of the time required to stop consuming risky foods. Only 2 respondents (2.30%) indicated that they planned to stop consuming such foods by the following week. These findings indicate that students' intentions to stop consuming risky foods remain relatively low and inconsistent. These intentions can be evaluated along three dimensions: willingness, readiness, and the time frame for stopping consumption. The types of food with the lowest intention to stop consumption were processed cheese products, frozen sweet foods, fried foods, and instant noodles.

With respect to the timeframe for stopping consumption of risky foods, most students reported uncertainty, with more than two-fifths stating they did not know when they would stop. Only a small proportion of students planned to stop consuming risky foods in the near future. These findings also show that although students may be aware of the health risks, many still lack a strong intention and clear commitment to when they will stop consuming these foods.

Table 4. Time to stop consuming risky foods (n = 87)

Time	N	%
Next week	2	2.30
Next year	15	17.24
Next month	17	19.54
Tomorrow	18	20.69
Don't know	35	40.23

3.2. Discussion

Behavior resulting from free choice (volitional behavior) is influenced by intention and the individual's actual control over its expression. Behavior modification can occur through alterations in the dominant belief system, which includes attitudes, subjective norms, and perceived behavioral control, ultimately leading to the intention to change behavior [14]. The theory of planned behavior posits that intention is a direct determinant of behavior, suggesting that an individual's actions will align with their intentions.

This study also found that quitting fried food is questionable. This is because students often eat fried foods as snacks or with large meals, so they are not ready to stop. Fried food is a cheap and popular snack

and side dish, shared with friends at school and home for lunch, according to a study, and eating fast food six times a week [15]. Recent studies have also raised concerns about students' consumption of fast food and snacks. Researchers found that students favor fast food for daily meals, with middling opinions [16]. Excessive consumption of fried food leads to hypercholesterolemia and cardiovascular disease. Specifically, dietary cholesterol elevates blood cholesterol levels, increasing the risk by a factor of 8 compared with individuals who do not consume fried foods [17], [18].

Research in Spain found that fried foods were not linked to stroke because most Spaniards use olive oil and sunflower seed oil, which produce little fat [19]. Unlike Indonesia, where palm oil is used in food frying. Previously, 12.3% of teenagers in Yogyakarta ate quick noodles and spaghetti [20]. Researchers attribute students' consumption of instant noodles to their status as immigrants from outside the region, often living away from their parents. Prior studies indicate that instant noodles are often regarded as a substantial meal, primarily because they are commonly prepared at home. Occasionally, individuals opt for instant noodles to save time, consuming them four times a month during both morning and evening meals [15], [21].

Teenagers and students who consume fast noodles too frequently may increase their spice consumption, which in turn increases their salt intake, thus harming their health, specifically boosting cardiometabolic risk factors. Even if it appears healthy, eating instant noodles more than 3 times per week increases the risk of this disease. Furthermore, instant noodles are high in monosodium glutamate (MSG) and sodium tripolyphosphate, which can increase the risk of lymphoma, malnutrition, and reduced bone density in youth [22]-[24]. This study measured readiness, willingness, and the duration of stopping the consumption of dangerous foods. Overall, students' intention to stop eating dangerous foods was limited. Knowledge, attitudes, and behaviors are needed to encourage students to stop eating harmful foods and to try alternatives. This action helps prevent, improve, and promote a healthy lifestyle by reducing the risk of early-onset degenerative illnesses [25].

Noor *et al.* [26] found that medical students consumed substantial amounts of fast food, highlighting health concerns and the need for targeted educational initiatives. Structured approaches such as systematic assessments have been shown to support the development of healthy eating behaviors among students [27]. School-based nutrition treatments show that structured educational programs improve teenagers' nutritional awareness, diet quality, and plans to eat healthier [28]-[31]. The planned behavior theoretical framework describes how attitudes, subjective norms, and perceived behavioral control influence behavioral intentions. Perceived behavioral control moderates this model, predicting health-related intentions [32]. Likewise, perceived behavioral control is a dominant predictor of healthy behavioral intentions across diverse demographics [33]. Environmental changes, such as nudges or decision architecture, can promote healthy eating habits alongside psychological and theoretical viewpoints. These findings emphasize the need for comprehensive interventions that incorporate personal, societal, and environmental aspects to promote healthy student diets [34].

The dietary decisions of young adults are significantly influenced by convenience, taste, cost, and the local food environment, leading these factors to frequently overshadow health considerations and result in energy-dense, nutrient-poor diets. Qualitative research conducted with young Australian adults identifies taste, convenience, social influences, accessibility, and affordability as significant barriers to healthy eating, leading to an increased reliance on discretionary foods [35]. Research conducted in urban neighborhoods designated as food deserts and in low-income environments indicates that restricted physical and economic access to affordable, nutritious foods correlates with inferior diet quality, increased cardiometabolic risk, and a greater reliance on inexpensive, highly processed convenience foods [36]-[38].

To improve student behavior, interventions must target individual beliefs, social norms, and environmental impediments. Multi-component food literacy treatments that include theoretical instruction, practical activities, and digital tools increase teenagers' nutrition awareness, diet, and BMI [39]. Additionally, a scoping review of postsecondary food interventions reveals that effective campus-based programs typically integrate nutrition education with supportive food environments [40]. Together with educational initiatives, peer-led approaches can reduce dangerous health-related behaviors [41]. In conclusion, psychological, social, and environmental factors reduce pupils' food safety goals. Understanding these characteristics is essential for healthy eating programs. Despite knowing the hazards of obesity, diabetes, and cardiovascular disease, students struggle to cut back on high-risk meals. Comprehensive efforts to address these issues will improve student diets over time. This study contains flaws; it cannot draw causal conclusions or track changes in intention due to its descriptive design. Self-administered questionnaires may bias memory and social desirability. The sample was accidentally selected from a single university with a high proportion of female students, limiting its generalizability. Finally, because this study focuses on intentions rather than dietary behavior, it is unclear how strongly these intentions affect food consumption.

4. CONCLUSION

The results of the study show that, based on readiness, willingness, and time spent consuming risky foods, there is no strong intention to stop consuming these foods, especially processed cheese, frozen sweets, and instant noodles. In addition, the lowest intention to find substitutes for risky foods indicates that these foods, such as fried foods, processed cheese, and pickles, are not yet ready to be replaced. By applying the theory of planned behavior, this study highlights that a person's intention is one of the barriers to dietary change. These findings emphasize the need for campus-based health promotion strategies to reduce consumption of high-risk foods. This is aimed at strengthening campuses through regular health promotion and education initiatives to control perceived behaviors and promote the availability of easily accessible food alternatives. Future research should use analytical designs to analyze predictors of intention and actual dietary behavior.

ACKNOWLEDGMENTS

All authors thank all respondents who contributed to this research.

FUNDING INFORMATION

The authors state no funding is involved.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors state no conflict of interest.

ETHICAL APPROVAL

This study obtained ethical approval from the Ahmad Dahlan University Ethics Committee Number 012305075, and all participants provided informed consent before completing the questionnaire.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author, [SND], upon reasonable request.

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