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FOOD ALLERGY PREVALENCE AND RISK MANAGEMENT BEHAVIOURS INFLUENCING STUDENT WELLBEING IN MALAYSIAN UNIVERSITY CONTEXT

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Abstract:

Food allergies are a major public health concern that significantly impacts student wellbeing, particularly in higher education settings where students are expected to independently manage dietary risks. Driven by the Health Belief Model (HBM), this study examined the prevalence of food allergies, self-management practices, and allergy-related behavioral risk practices among university students in Malaysia. A quantitative cross-sectional design was employed. Data were collected using a structured bilingual questionnaire and analyzed using IBM SPSS Statistics version 30. Out of 370 respondents, 31.1% ($n = 115$) reported a medically diagnosed food allergy. Within this cohort,

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61.4% frequently engaged in high-risk habits, with 47.9% consuming unverified ingredients, 37.4% neglecting allergen labels, and 81.7% failing to carry emergency rescue medication. Interpreted through the HBM, these findings indicate low perceived susceptibility and perceived severity regarding potential anaphylactic events, alongside high perceived barriers to compliance. These risk behaviors significantly elevate the probability of adverse allergic reactions, compromising student well-being. This study provides important baseline data with a theoretically grounded empirical assessment of food allergy self-management among Malaysian university students. Ultimately, the results highlight the need to adjust environmental cues to action through required allergen declaration on campus menus, food handler safety training, campus allergy awareness efforts, and improved emergency clinic protocols.

Keyword:

Food Allergies; Food Safety; Higher Education; Risk-Taking Behaviour; Student Wellbeing

Introduction

Food allergy is a growing worldwide public health problem (Dahdah et al., 2026), affecting approximately 5–10% of the population, with rising prevalence in adolescents and young adults (Gupta et al., 2019; Ebisawa et al., 2020). Warren et al. (2017) identified university students as a particularly vulnerable population due to the lack of parental supervision and increased exposure to different, uncontrolled eating circumstances. Getting used to university life can be tough. Students need to deal with making their own food choices and eating with others who may not have access to or knowledge of allergens in the food. Successful food allergy management involves continual emergency readiness, strict avoidance of allergens (Nagarajan et al., 2026), diligent label reading, and clear communication with foodservice operators (Rawaqa & Alrawashdeh, 2026). However, research has shown that university students frequently have trouble with self-management, which leads to sub-optimal risk management behaviours such as eating meals without checking ingredients or not carrying epinephrine auto-injectors (Schelly et al., 2022; Ajabnoor et al., 2023). Food allergy has been increasingly common in young adults, but little is known about the self-management of their illness among Malaysian university students, or the behavioural characteristics that may place them at risk of a bad allergic reaction. Most local research are on paediatric populations or general food safety, rather than on the specific psychosocial requirements of young people (Soon, 2018). This study fills this gap by analysing the prevalence and the risk management behaviours that influence the overall wellbeing of Malaysian university students. To fill this critical void, this study adopts the Health Belief Model (HBM) as the underpinning theory to systematically diagnose how undergraduate students' cognitive appraisals of threat, namely, the perceived susceptibility

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and severity of food allergens, interact with institutional barriers and environmental cues to propel dietary risk behaviours on campus. Therefore, this study aims to meet three main research objectives such as:

The research objectives of the study are:

1. to determine the prevalence of food allergies among university students.
2. to identify types of risk-taking behaviours among students with food allergies.
3. to examine the frequency of risk-taking behaviours among students with food allergies.

The corresponding research questions are:

1. what is the prevalence of food allergies among university students?
2. what types of risk-taking behaviours are practised by students with food allergies?
3. how frequently do students with food allergies engage in risk-taking behaviours?

Literature Review

Definition and Mechanisms of Food Allergy

Food allergy represents an abnormal immune response against certain dietary proteins, predominantly mediated by immunoglobulin E (IgE), leading to symptoms from urticaria to anaphylaxis (Muraro & Hernández, 2019). Allergies are reproducible immunological reactions that can be life-threatening or lethal, unlike food intolerances. The common allergies are peanuts, tree nuts, eggs, milk, shellfish, wheat, and soy (Gupta et al., 2019). Food allergy is said to be on the rise worldwide over the past 20 years with higher percentages in Western countries and fast increasing figures in Asia-Pacific regions including Malaysia. (Ebisawa et al., 2020).

Risk-Taking Behaviours Among Young Adults

Risk-taking behaviour in the management of food allergy is any deliberate or negligent conduct that increases the likelihood of accidental allergen exposure irrespective of the individual's awareness of potential consequences (Warren et al., 2017). These behaviours are observed in young adults, especially those transitioning to the independence of university life, in several important ways which includes inconsistent reading of food labels, the perception that trace levels of allergens are "safe," and the repeated failure to carry emergency medications such as epinephrine auto-injectors (EAIs) (Lee et al., 2022; Schelly et al., 2022).

Recent empirical research suggests that these dangers are not only knowledge gaps but are deeply rooted in the social and psychological setting of young adulthood. Engel et al. (2025) suggest that "fear of negative social evaluation" is a distinct construct that can often and dangerously override safety procedures. For example, students may not disclose allergies in dining contexts for fear of seeming "burdensome" or to avoid the stigma of a medicalised identity (Engel et al, 2025). In high-pressure social situations such as parties or dating, social coherence is often desired, leading to "disclosure fatigue" and riskier eating choices to maintain "normal" social identity (Engel et al., 2025).

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Food Allergy in the Malaysian Higher Education Context

The multicultural food scene in Malaysia, with its numerous cuisines and sophisticated food preparation procedures, poses substantial problems for successful allergen avoidance. The danger of cross-contact when eating food in ordinary life is further increased by the widespread use of common cooking utensils and the hidden presence of allergens in sauces, condiments and marinades (Turner et al., 2022). In this regard, evidence indicates that awareness and self-management strategies for food allergies are still limited in young adults, especially university students. Studies on student food-related practices demonstrate low levels of regular participation in protective behaviours such as checking ingredient labels and verifying allergy composition when dining out (Gupta et al., 2019). Furthermore, institutional food environments in higher education settings generally lack standardised allergen labelling systems and formal training on food allergy safety and prevention techniques is not always provided to food service staff (Konstantinou et al., 2025; Begen et al., 2016). These institutional and behavioural constraints lead to an increased dependence on individual risk management measures which may not be enough to avoid inadvertent exposure and subsequent health implications in academic settings.

Student Wellbeing and Institutional Responsibility

Student wellbeing encompasses the physical, mental and social health domains. The poor treatment of food allergies is a direct physical health risk through allergy reactions but also may lead to anxiety, social isolation, and a weakened quality of life due to fear of reactions (Greiwe, 2023). University managements should provide safe food circumstances. Best practices include allergen disclosure, allergy training for staff, emergency protocols, and wellness initiatives for affected students (Lee & Liu, 2021). Without such support, students with allergies remain at elevated risk.

Methodology

Research Design

A quantitative cross-sectional design was utilised to examine prevalence and behavioural patterns at a single point in time. This design is suitable for describing population characteristics and associations without the manipulation of variables.

Population and Sample

A quantitative cross-sectional design utilizing purposive sampling was employed among undergraduate students (aged 18–30) at a Malaysian public university. The population consisted of 6,267 undergraduate students from a Malaysian public university (Universiti Teknologi MARA, Pulau Pinang branch) was gathered from academic affairs division. Based on Krejcie and Morgan (1970), a minimum sample of 364 was required. A purposive sampling method was used to collect the data. A total of 370 responses were obtained (response rate 98.9%). Among these, 115 students (31.1%) self-reported medically diagnosed food allergies and were included for behavioural analysis. Non-allergic respondents were omitted from risk-behaviour questions.

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Instrumentation

Data were collected using a structured bilingual questionnaire (English and Malay), adapted from validated instruments in previous studies (Warren et al., 2017; Zaher et al., 2023). The instrument comprised four sections: (A) demographic information (age, gender, faculty); (B) allergy status and medically diagnosed allergens (yes/no, allergen types); (C) risk-taking behaviours (9 items, yes/no format); and (D) frequency of risk behaviours (5-point Likert scale: 1=Never to 5=Always). Pilot testing involving 30 students (excluded from the final sample) demonstrated satisfactory internal consistency (Cronbach's alpha = 0.82).

Data Collection Procedure

Data collection was executed over a four-week period (February–March 2026) using non-probability purposive sampling to target undergraduate students aged 18–30 years. A dual-stage screening method was implemented in the digital questionnaire administration to ensure stringent data validity. We received 370 completed responses in total. The response rate was effective at 98.9%.

Inclusion Criteria: Respondents explicitly self-reported a formal medical diagnosis of a food allergy (31.1%, n=115), and these respondents were included in subsequent behavioural risk and frequency analysis modules.

Exclusion Criteria: No risk-behavior monitoring questions were posed to respondents without a proven medical allergy diagnosis (68.9%, n=255) to prevent analytical bias.
The study was voluntary and signed informed permission was obtained. Confidentiality and anonymity were assured.

Data Analysis

Quantitative data were analysed with the IBM SPSS Statistics (Version 30). Descriptive statistics such as frequencies and percentages were utilised to profile the student demographics and to track changes in clinical allergies. The types and rates of behavioural risk-taking actions were calculated.

Results

Demographic profile of the respondents

Table 1 presents the demographic profile of respondents identified with food allergy (n = 115) selected from the overall sample of 370 students from Permatang Pauh and Bertam campuses.

Table 1: Respondents' Profile

	Item	Frequency (n=115)	Percentage
Gender	Male	61	53
	Female	54	47
Age	18-21	38	33

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	22-25	68	59
	26-30	9	8
Faculty	Faculty of Mechanical Engineering	16	13.9
	Faculty of Electrical Engineering	3	2.6
	Faculty of Chemical Engineering	13	11.3
	Faculty of Civil Engineering	11	9.6
	Faculty of Hotel and Tourism Management	49	42.6
	Faculty of Pharmacy	8	7
	Faculty of Health Science	12	10.4
	Others	3	2.6
Level of Education	Pre-Diploma	3	2.6
	Diploma	55	47.8
	Bachelor's Degree	53	46.1
	Postgraduate (Master's/PhD)	4	3.5
Year of Study	Year 1	26	22.6
	Year 2	36	31.3
	Year 3	31	27
	Year 4	20	17.4
	Others	2	1.7
Current Living Management	University's College	92	80
	With Family	15	13
	Rented House	8	7

Prevalence of Food Allergy

The first objective of this study was to determine the prevalence of food allergies among students in UiTM Penang. The study began by eliminating respondents with a proven medical diagnosis to ensure high data validity. The results are shown in Figure 1:

1. Medically Diagnosed (31%): 115 out of 370 respondents reported having a food allergy. This group forms the targeted sample for the study.

2. No Food Allergy (69%): 255 respondents reported no allergies and were excluded from further analysis.

By concentrating exclusively on these 115 diagnosed individuals, the study provides a precise foundation for addressing research objective two (risk behaviors) and research objective three (frequency of behaviors). This targeted method guarantees that the findings are representative of the actual clinical risks treated by students in a university context.

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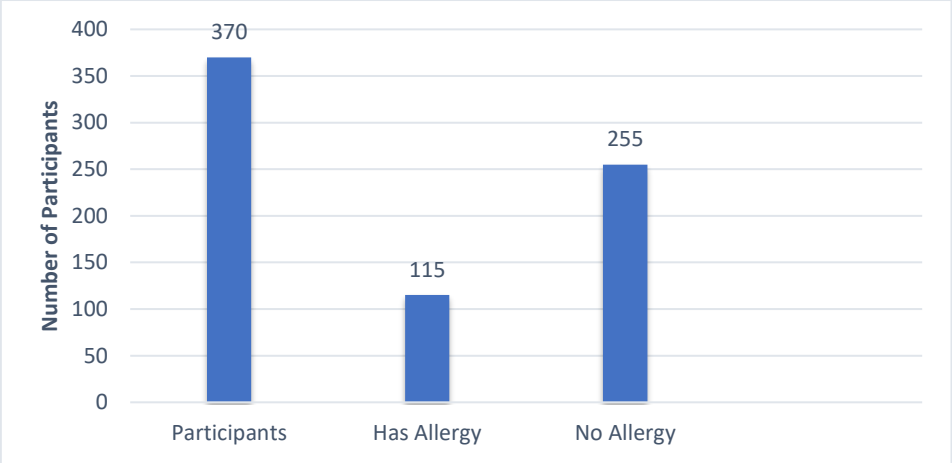

Figure 1: The Prevalence of Food Allergy Among Students

Figure 2 shows the types of allergens. The predominant allergen is shellfish, specifically shrimp and crab (50.4%), followed by nuts such as peanuts and almonds (39.1%) and dairy. Some students reported that they have a rare allergy, specifically to pickled foods and Monosodium Glutamate (MSG).

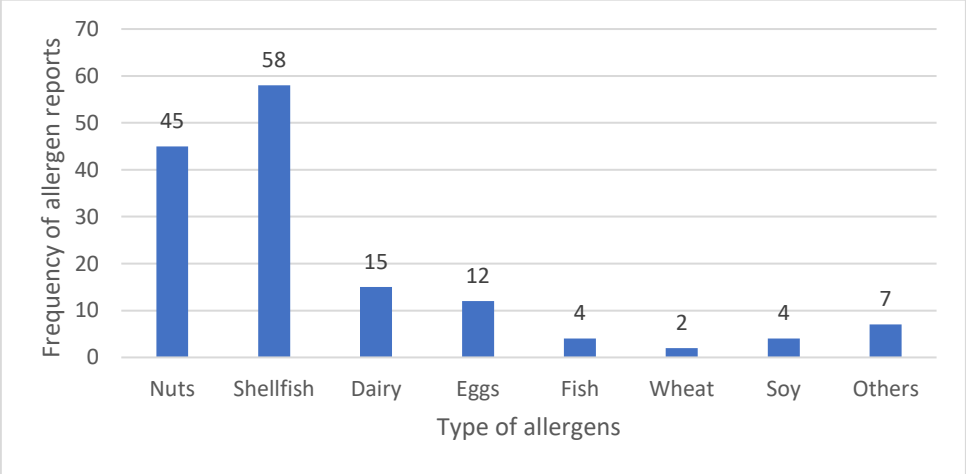

Figure 2: Food Allergen

The Severity of Allergic Reactions

Most of the students (42.6%) only experienced mild allergic reaction like itching and minor rash. Additionally, 41.7% of the students exhibit moderate allergy reactions, including hives, swelling and stomach cramps. The research also discovers that a minority of the students (15.7%) experience a severe allergic reaction if they happen to be exposed to allergens. They will experience allergic reactions such as difficulty breathing, wheezing and life-threatening anaphylaxis.

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Identification Risk-Taking Behaviour

The second objective of this study was to ascertain the types of risky behaviours exhibited by university students with food allergies. As shown in Figure 3, these behaviours are divided into two categories: social influences and lapses in dietary vigilance.

Social Influence and Symptom Concealment

The results imply social pressure is a substantial factor in risk-taking, with students generally valuing fitting in over medical safety:

- Social Event Pressure: The most prominent risk is social gathering, with 65.2% of respondents stating that they are more likely to make food choices in social situations.
- Concealment of Symptoms: Nearly half of the participants (49.5%) acknowledged hiding mild symptoms to avoid drawing attention to their allergy.
- Social Awkwardness: Additionally, 35.6% of students experienced discomfort in informing their dietary requirements to peers or staff.

Dietary Caution and Practice Gaps

The survey also discovered substantial gaps in the ways in which students manage the food safety of their daily lives:

- Intentional Exposure: An astounding 47.9% of respondents acknowledged to "trying a small amount" of a known allergy, assuming it would not induce a serious reaction.
- Negligence in Labelling: More than one third of respondents (37.4%) claimed that they do not always examine food labels before eating.
- Ambiguous ingredients: Nearly 27.8% of respondents ingested food that did not clearly indicate ingredients, which places them at risk of accidental exposure.

Students mentioned various risk behaviours. The most important cause was the involvement in social events that led to the consumption of unhealthy food (65.2%). Other habits included eating food without confirmed ingredients (47.9%), not consistently checking labels (37.4%) and eating food items without labels (27.8%). Only 18.3% said they always carried emergency medication.

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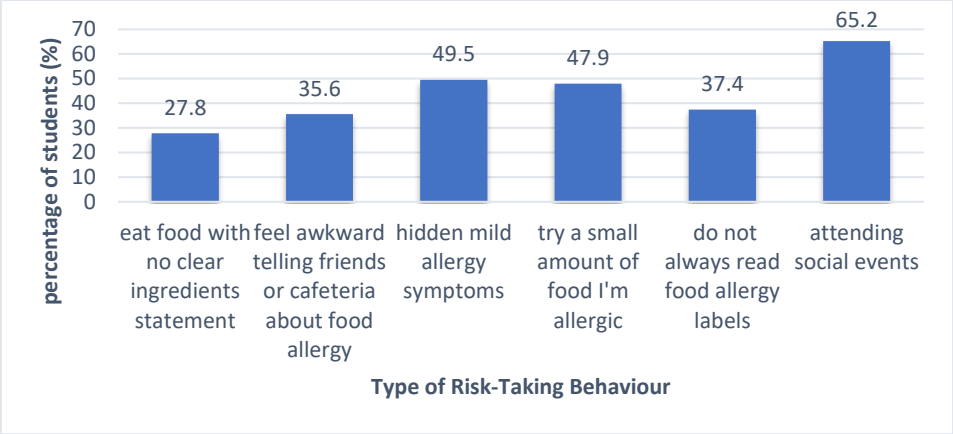

Figure 3: Types of Risk-Taking Behaviour Among Students with Food Allergies

The Incidence of Risk Behaviour

The third objective was to determine the prevalence of students' engagement in risky eating behaviours. The stats are seen in figure 4 where the majority of students tend to ignore safety procedures. 33.3% of students take risks "always" and 28.1% of them take risks "often" making it a total of 61.4%. In particular, 33.3% said that they "always" engage in risky behaviour, suggesting that this is a habitual practice.

However, only 7.0% of students 'never' take risks, which indicates that safe habits are the exception, not the rule. The frequency of these activities implies that children have become accustomed to danger. This habit-forming tendency is probably a combination of social pressure and underestimating of the medical effects. To increase student safety, the institution should go beyond simple awareness and provide actual instruction on social dining management and label reading.

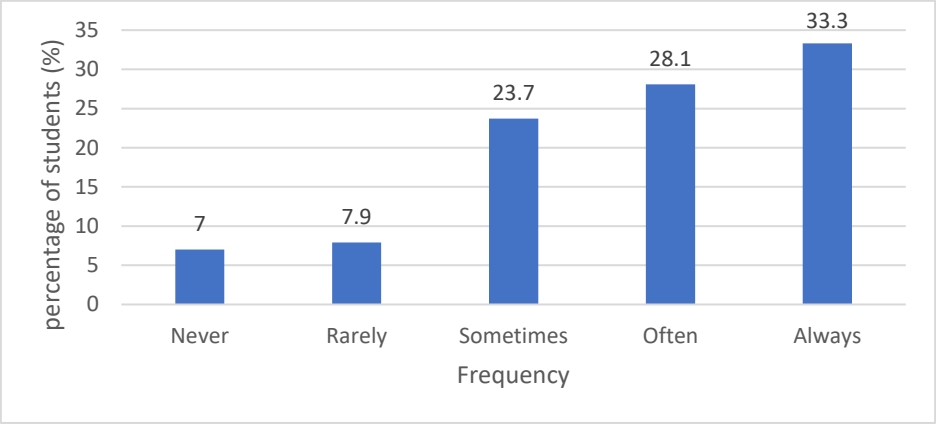

Figure 4: Frequency of Risk-Taking Behaviour

Discussion

The results of this study indicate that 31.1% of UiTM Pulau Pinang students have a food allergy medically diagnosed, which directly answers Research Objective 1. This prevalence was much greater than the global estimates of 5–10% reported by Gupta et al. (2019). This discrepancy

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suggests that food allergies are a greater health concern for this university cohort than has been previously identified. This high prevalence probably reflects both the increasing trend of allergy in the Asia-Pacific region (Ebisawa et al., 2020) and the specific demographic characteristics of young adults in higher education who are more likely to persue diagnosis.

Regarding the forms of risk-taking behaviours (Research Objective 2), the high prevalence of shellfish allergy (50.4%) is a direct indicator of the eating habits in Malaysia. The abundance of shellfish in the local diet creates a persistent danger of unintentional exposure for students (Shen et al., 2026).

Common food allergens have been identified from the world literature and include a wide variety of foods such as nuts, fish, shellfish, dairy, eggs, soy and wheat. However, regional dietary habits play a large role in the incidence of allergens especially in Asia where seafood allergies are more common. Sensitisation to shellfish and nut allergy are often reported in the local community, demonstrating the importance of local food culture and dietary exposures to the allergy profile (Wai et al., 2021). Also, the presence of allergens in complicated recipes, sauces, marinades and shared cooking areas raises the risk of unintentional exposure and the challenge of applying appropriate self-management measures (Hassan et al., 2020).

The reported risk-taking behaviours, such as social eating without precautions and not carrying emergency medication, reflect a worrisome gap between medical knowledge and its actual implementation. Only 18.3% of the respondents brought rescue medication, much below recommended safety levels (Muraro & Hernández, 2019). This is of particular concern in view of the known risk of anaphylaxis. Regarding allergy disclosure, students seem to choose peer acceptability over allergen avoidance, especially in social groups where it would be considered a social burden (Zaher et al., 2023).

Critically, the prevalence of these behaviours (Research Objective 3) suggests that unsafe practices are not isolated incidents but are habitual. 61.4% of students taking risks “often” or “always” indicates that the taking of risks has been normalised within the student culture. This is further compounded by structural limitations, campus food shops and restaurants sometimes do not clearly list allergens, and staff training remains variable (Lee & Liu 2021). Without institutional food safety governance, students are left to assume and hope.

Conclusion

The study concluded that the high prevalence of food allergies among Malaysian university students (31%) is related with significant risk-taking behaviours that jeopardise student wellness. The findings show that high percentage of allergic students (61.4%) routinely participate in risky activities, particularly in social circumstances, and most do not carry emergency medication that could be lifesaving.
The findings suggest the need for institutional intervention as a matter of urgency. Universities are encouraged to move beyond awareness and develop formal food allergy policies. These must comprise:

- Comprehensive allergen labelling and food safety training for all food handlers on campus.
- Organised wellbeing programs and orientation modules that enhance student health awareness and "social resilience" in allergy management.

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- Emergency protocols, such as the availability of epinephrine/ medication in campus clinics, to assist the 15.7% of students who experience severe reactions.

Future research should evaluate the effectiveness of these institutional interventions and explore qualitative perspectives to gain a deeper understanding of the psychological motivators behind social risk-taking among students. Enhancing these measures are the keys to moving food allergy management from an individual burden to an institutional shared duty.

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Author Contribution Statement: All authors contributed significantly to the development of this manuscript. *Norrina Din (corresponding author) was responsible for the conceptualisation, methodology, and overall supervision of the study. Sarah Nur Qhadeeja Binti Khairul Fahmy, Muhammad Izhan Bin Norshaidi and Farafazliani Mohamed handled data collection and analysis. Nurul Imtiaz binti Abd Gani contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript before submission.

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