

Flavoured Beverages and Obesity Risk Among Public University Students: A Nutritional Analysis at UTHM Pagoh

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ABSTRACT

Obesity among young adults is an increasingly prevalent public health issue and is often associated with the consumption of flavoured beverages or sugar-sweetened beverages (SSBs), which contribute excessive liquid calories. Although the relationship between SSBs and obesity has been widely discussed in the international literature, micro-contextual studies within the campus environment of Malaysian public universities remain limited. This study aims to identify the dominant types of flavoured beverages, purchasing factors and the relationship between flavoured beverage purchasing factors and students' body mass index (BMI) at Universiti Tun Hussein Onn Malaysia (UTHM), Pagoh Campus. This cross-sectional quantitative study involved 300 students selected through simple random sampling, with data collected using a digital questionnaire and analysed using descriptive statistics and regression in SPSS. The findings indicate a high inclination toward flavoured beverages ($M = 3.74$), particularly tea- and coffee-flavoured beverages ($M = 3.89$), while the primary purchasing factor was the desire to feel refreshed ($M = 4.20$). In terms of BMI, 49% of respondents were in the normal category, while 34% were in the overweight category. Regression analysis showed a significant relationship between flavoured beverage purchasing factors and BMI ($p < 0.001$), but with a small effect (Adjusted $R^2 = 0.082$), indicating that obesity is influenced by various other factors. This study contributes important local empirical evidence for the development of data-driven campus health interventions to reduce obesity risk among university students. From an ethical perspective, data collection was conducted voluntarily through informed consent at the beginning of the Google Form; respondents' confidentiality and anonymity were maintained in accordance with the principles of human research ethics. However, the cross-sectional design limits causal inference and the temporal direction between flavoured beverage purchasing factors and BMI cannot be ascertained. Self-reported measures of beverage preferences/motivations and BMI may introduce recall bias and social desirability bias and may lead to misclassification of obesity status. Therefore, the small effect finding (Adjusted $R^2 = 0.082$) supports the need for a more ecological multivariable model incorporating physical activity, overall diet, sleep, stress, socioeconomic status, and the campus food environment.

Keywords: Sugar-sweetened beverages (SSB), obesity risk, body mass index (BMI), university students, dietary behaviour, campus food environment

INTRODUCTION

Background of Study

Obesity is a global public health issue closely associated with an increased risk of non-communicable diseases such as type 2 diabetes, hypertension and cardiovascular disease (Rosales-Ricardo et al., 2023). In the Malaysian

context, the National Health and Morbidity Survey (NHMS) 2019 reported that 50.1% of adults were categorized as overweight or obese, with 30.4% overweight and 19.7% obese (Chong et al., 2022). This trend indicates that the health burden associated with excess body weight also has implications for young people, including university students who are developing long-term dietary habits. In the campus environment, students' eating patterns are typically influenced by academic stress, sedentary lifestyles and access to convenience foods and beverages (Wright & Anstrom, 2023). One component receiving increasing attention is the intake of flavoured beverages or sugar-sweetened beverages (SSBs), which include carbonated drinks, sweetened tea/coffee, energy drinks and flavoured fruit drinks (Bleich et al., 2009). SSBs contribute "liquid calories" that can easily be consumed in excess without increasing satiety, thereby potentially disrupting daily energy balance (Malik et al., 2013).

The relationship between SSBs intake and obesity has been consistently supported by longitudinal studies, randomized controlled trials and international meta-analyses. Malik et al. (2013), in a systematic analysis found that regular SSBs consumption is associated with weight gain and increased BMI while intervention studies replacing SSBs with sugar-free beverages showed protective effects against weight gain. A more recent meta-analysis also confirmed a significant association between SSBs, BMI and obesity risk (Farhangi et al., 2022). At the global policy level, the WHO (2015) recommends reducing free sugars intake to less than 10% of daily energy as an obesity prevention measure. In Malaysia, NHMS 2019 reported high levels of sugarsweetened beverage consumption among youth and young adults (Chong et al., 2022). Local studies among university students have also shown that unhealthy lifestyles and low physical activity are associated with higher intake of sugary beverages (Cheng & Lau, 2022).

Although international and national literature demonstrates a robust relationship between SSBs and obesity, there remains a lack of studies examining this issue in a micro-contextual manner within specific Malaysian public university campus environments, particularly semi-urban campuses such as UTHM Pagoh. Most previous studies have focused on school adolescents or the general adult population (Chong et al., 2022), without simultaneously integrating: (i) the dominant types of flavoured beverages on campus, (ii) purchasing drivers (taste, price, access, the desire for "cooling/refreshing," study pressure), and (iii) their relationship with university students' BMI within a local nutritional ecology context. This gap differentiates the present study from prior research because it focuses on a specific public institution (UTHM Pagoh) and real campus dietary dynamics. The lack of location-specific empirical evidence makes it difficult for universities and policymakers to design targeted nutritional interventions at the campus level (Rosales-Ricardo et al., 2023 & Chong et al., 2022). Without local data, obesity prevention strategies often rely on national generalizations that may not fully reflect students' realities. Therefore, this study is driven by a practical need to provide context-based scientific evidence particularly to support the development of sugar literacy programs, promotion of healthier beverage choices and data-informed campus health policies.

Study Objectives:

This study aims to: (i) identify the dominant types of flavoured beverages among UTHM Pagoh students; (ii) identify purchasing factors/drivers of flavoured beverage purchases and (iii) test the relationship between flavoured beverage purchasing factors and BMI among UTHM Pagoh students.

Study Justification:

Micro-contextual studies within the ecological setting of Malaysian public university campuses remain limited, while WHO recommends reducing free sugars intake for obesity prevention and NHMS 2019 shows a high burden of overweight/obesity. This study provides local evidence for more targeted campus health interventions (WHO, 2015; Chong et al., 2022).

Research Questions:

RQ1: What are the most dominant types of flavoured beverages among UTHM Pagoh students? RQ2: What are the main purchasing factors that drive students to buy flavoured beverages?

RQ3: Do flavoured beverage purchasing factors have a significant relationship with students' BMI?

Study Hypotheses:

H1: There is a significant relationship between flavoured beverage purchasing factors and BMI among UTHM Pagoh students.

H0: There is no significant relationship between flavoured beverage purchasing factors and BMI among UTHM Pagoh students.

Definitions of Key Terms:

Flavoured beverages/SSBs: Beverages containing added sugars (e.g., soda, sweetened tea/coffee, energy drinks, flavoured fruit drinks) that contribute “liquid calories” and may increase the risk of weight gain (Malik et al., 2013).

BMI: Body Mass Index as an anthropometric indicator for classifying weight status; in this study, BMI was collected as self-reported and interpreted according to the BMI categories used in the questionnaire. Purchasing factors: respondents’ motivations for purchasing flavoured beverages (e.g., tasty, sweet, to quench thirst, to refresh, to feel refreshed).

Building on this gap, the study examines the relationship between flavoured beverage consumption and obesity risk among students at Universiti Tun Hussein Onn Malaysia (UTHM), Pagoh Campus. The study focuses on patterns of beverage types selected, purchasing factors and their relationship with Body Mass Index (BMI) using a cross-sectional quantitative approach. The study contributes two main dimensions: (1) a theoretical contribution to the literature on university students’ nutrition in Malaysia, and (2) a practical contribution as a foundation for evidence-based campus health intervention development. The indicators in this study can be mapped onto health determinants: (a) individual/behavioural: types of flavoured beverages & purchasing factors; (b) sociodemographic: gender, age, ethnicity, religion, level of study, faculty; (c) campus environment: access to cafeterias, vending machines, convenience stores; and (d) structural/policy (future research recommendations): price, marketing, vending machine placement, and policies promoting healthier choices. This mapping aligns with the Dahlgren & Whitehead (1991) framework, which emphasizes layered determinants at the individual–social–environmental–structural levels.

METHODOLOGY

Study Design

In this study, the research approach used is quantitative with descriptive and regression analyses to determine the relationship between one variable and another, as well as to obtain the mean and standard deviation for each variable and to determine the coefficient of determination and partial correlation coefficient test. The approach used is cross-sectional, where measurement and observation are conducted at the same time for flavoured beverage consumption and student obesity among Universiti Tun Hussein Onn Malaysia, Pagoh students. This quantitative method is suitable for examining the types of flavoured beverages and the factors for purchasing flavoured beverages among UTHM Pagoh students by summarizing the data in the form of frequency values. This cross-sectional design is consistent with nutritional research practices aimed at assessing relationships between sugar-sweetened beverage consumption patterns and obesity status within specific populations (Altamimi et al., 2023).

Study Area

This study was conducted among students at Universiti Tun Hussein Onn Malaysia (UTHM), Pagoh Campus.

Method of Data Collection

Data collection was conducted from 1 April 2024 to 22 April 2024 through the distribution of a digital questionnaire using Google Form. The questionnaire was distributed to UTHM students via social media platforms such as WhatsApp, Instagram, Telegram and Messenger.

Data Collection Procedure

Because UTHM Pagoh students today are exposed to a media-rich environment and frequently use social media, they constitute the target group for this study. This study was conducted within a public university campus environment that provides easy access to sugary beverages through cafeterias, vending machines and convenience stores, as frequently reported in the literature on university food environments (Malik et al., 2010). The questionnaire link included an information sheet and respondents provided informed consent before proceeding with their responses. Participation was voluntary and no personally identifying information (e.g., name/student ID number) was collected to preserve anonymity and confidentiality.

Study Instrument

Primary data are data obtained from an original source (Ahmed, 2019). To conduct this study, the researcher collected primary data by distributing a digitally designed questionnaire (Google Form). The Google Form designed for this study comprises four sections, namely Sections A, B, C, and D. In Section A, six demographic questions were measured using a nominal scale. The items in Section A include gender, age, ethnicity, religion, level of study and faculty of the respondent. Sections B and C use the same five-point Likert scale, where scale 1 represents Strongly Disagree, scale 2 represents Disagree, scale 3 represents Neutral, scale 4 represents Agree, and scale 5 represents Strongly Agree. Section B contains six questions examining the types of flavoured beverages preferred among UTHM Pagoh students, while Section C contains five questions designed to collect information about factors influencing the purchase of flavoured beverages among UTHM Pagoh students. Subsequently, in Section D students' body mass index (BMI) at UTHM Pagoh was collected using a nominal scale. The use of Likert scales in studies of dietary behaviour is consistent with recommended practices for measuring consumer attitudes and tendencies (Vega-Muñoz et al., 2022). BMI was collected as self-reported rather than objectively measured this may increase reporting error and misclassification of obesity status. Future studies are recommended to use objective anthropometric measurements as well as validated dietary assessment tools and physical activity metrics to improve precision.

Study Population

The population of first-year students at UTHM Pagoh in 2024 was estimated at approximately 700 students. The study sample comprised 300 students, including 157 male students and 143 female students.

Sampling Technique

A sample size of 300 was selected based on the table recommendation by Krejcie and Morgan (1970). The sampling technique used in this study was simple random sampling. This random sampling technique was conducted by drawing lots from the population members (lottery technique). Random sampling was used to avoid bias in data collection in this study. This random sampling approach is recommended in quantitative survey research to increase sample representativeness and reduce respondent selection bias (Creswell, 2014).

Study Variables

The types of flavoured beverages preferred among UTHM Pagoh students, factors for purchasing flavoured beverages and BMI at UTHM Pagoh were examined. In this study, flavoured beverage consumption and purchasing factors were identified as independent variables, while BMI was used as the dependent variable to represent obesity status. Control variables such as gender and age were also considered in the analysis to reduce the effects of confounding variables as recommended in nutritional epidemiology studies (Gibson, 2005).

Data Analysis

After the Google Form responses were obtained, the data were entered into Microsoft Excel and analysed using SPSS version 2.3. SPSS is a computer application package used in this study to analyse statistical data and present study findings in the form of descriptive analysis, the coefficient of determination test and the partial correlation coefficient test (t-test). Descriptive analysis includes mean, standard deviation, frequency and

percentage, while inferential analysis was used to test relationships between variables with the significance level set at $p < 0.05$ (Perera et al., 2022).

Ethical Considerations

This study adhered to the principles of human research ethics namely informed consent, voluntary participation and data confidentiality and anonymity in accordance with the Declaration of Helsinki (World Medical Association, 2024).

RESULTS

Section A: Respondent Demographic Data

A total of 300 UTHM Pagoh students participated in this study.

Table 1: Respondent Demographics

BACKGROUND	Category	Frequency	Percentage(%)
Gender	Male	157	52.3
	Female	143	47.7
Age	< 20	25	8.3
	20	51	17.0
	21	137	45.7
	22	55	18.3
	> 22	32	10.7
Ethnicity	Malay	133	44.3
	Chinese	110	36.7
	Indian	43	14.3
	Others	14	4.7
Religion	Islam	135	45.0
	Buddhism	88	29.3
	Hinduism	31	10.3
	Christianity	41	13.7
	Others	5	1.7
Level of Study	Diploma	34	11.3
	Bachelor's Degree	251	83.7
	Master's Degree	14	4.7
	Doctor of Philosophy (PhD)	1	0.3
Faculty	Diploma Studies Centre	34	11.3
	Faculty of Applied Sciences and Technology	148	49.3
	Faculty of Engineering Technology	118	39.3

SECTION B: Types of Flavoured Beverages Preferred by Universiti Tun Hussein Onn Malaysia (Pagoh) Students

Table 2. Types of Flavoured Beverages Preferred by Students of Universiti Tun Hussein Onn Malaysia (Pagoh Campus)

No	Items	n (%)					Mean	Standard Deviation	Level
		SD	D	N	A	SA			
1	Tea-flavoured beverages	4 (0.01)	41 (0.14)	52 (0.17)	89 (0.30)	114 (0.38)	3.89	1.10	High
2	Milk-flavoured beverages	5 (0.02)	36 (0.12)	74 (0.25)	100 (0.33)	85 (0.28)	3.74	1.05	High
3	Fruit-flavoured beverages	6 (0.02)	24 (0.08)	81 (0.27)	100 (0.33)	89 (0.30)	3.81	1.01	High
4	Soda-flavoured beverages	9 (0.03)	43 (0.14)	61 (0.20)	76 (0.25)	111 (0.37)	3.79	1.71	High
5	Unflavoured beverages	25 (0.08)	64 (0.21)	64 (0.21)	72 (0.24)	75 (0.25)	3.36	1.29	High
6	Coffee-flavoured beverages	12 (0.04)	28 (0.09)	51 (0.17)	100 (0.33)	109 (0.36)	3.89	1.12	High
Total		3.74							High

SECTION C: Factors Influencing the Purchase of Flavoured Beverages among UTHM Pagoh Students

Table 3. Factors Influencing the Purchase of Flavoured Beverages among UTHM Pagoh Students

No	Items	n (%)					Mean	Standard Deviation	Level
		SD	D	N	A	SA			
1	I like drinking flavoured beverages because they taste good	4 (1.33)	14 (4.67)	50 (16.67)	93 (31.00)	139 (46.33)	4.16	0.95	High
2	I like drinking flavoured beverages because they taste sweet	5 (1.67)	30 (10.00)	62 (20.67)	103 (34.33)	100 (33.33)	3.88	1.04	High
3	I like drinking flavoured beverages to quench thirst	2 (0.67)	15 (5.00)	74 (24.67)	99 (33.00)	110 (36.67)	4.00	0.93	High
4	I like drinking flavoured beverages to refresh myself	1 (0.33)	12 (4.00)	54 (18.00)	98 (32.67)	135 (45.00)	4.18	0.89	High

5	I like drinking flavoured beverages to feel refreshed	2 (0.67)	17 (5.67)	50 (16.67)	81 (27.00)	150 (50.00)	4.20	0.96	High
Total		4.08							High

SECTION D: Body Mass Index (BMI) among UTHM Pagoh Students

Table 4. Body Mass Index (BMI) of UTHM Pagoh Students

No	BMI Category	Frequency(n)	Percentage(%)
1	<18.5 (Underweight)	27	9.00
2	18.5 - 24.9 (Normal)	147	49.00
3	25.0 -29.9 (Overweight)	102	34.00
4	30.0 - 34.9 (Obesity Class I)	22	7.33
5	>35.0 (Obesity Class II and above)	2	0.67

SECTION E: Influence and Relationship between Flavoured Beverage Purchasing Factors and Body Mass Index (BMI) among UTHM Pagoh Students

Regression testing showed a significant relationship between flavoured beverage purchasing factors and BMI, with $R^2 = 0.085$, Adjusted $R^2 = 0.082$, $t = 5.367$ and $p < 0.001$.

Coefficient of Determination Test:

Table 5. Results of the Coefficient of Determination Test

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.291 ^a	.085	.082	.759

Partial t-Test

Table 6. Results of the Partial t-Test

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.095	.250		4.385	.000
	Flavoured beverage purchasing factors	.054	.010	.291	5.367	.000

DISCUSSION

The findings of this study show that UTHM Pagoh students have a high inclination toward flavoured beverages ($M = 3.74$), particularly tea and coffee ($M = 3.89$), which can be interpreted through the Arousal Theory and Self-Regulation framework whereby individuals use caffeine to optimize alertness levels to meet academic demands this is consistent with findings that caffeine increases alertness, attention and cognitive performance among young adults (Nehlig, 2010; McLellan et al., 2016; Smith, 2022). However, most previous studies have focused only on the effects of caffeine on cognitive function without directly linking it to physical health indicators such as BMI, whereas this study extends the discourse by testing the relationship between motivations for purchasing flavoured beverages and students' anthropometric status. Interestingly, the primary purchasing factor was not sweetness ($M = 3.88$), but the motivation "due to feeling cold and refreshed" ($M = 4.20$), which challenges the classic hedonic model that posits sweetness and the dopamine reward system as the main drivers of sugar-sweetened beverage (SSB) consumption (Malik & Hu, 2019). In Malaysia's hot-humid tropical climate, this finding suggests that thermoregulation needs may be more dominant than purely hedonic motivations, a dimension rarely emphasized in beverage choice behavioural models that are mostly developed in temperate country contexts (Zhang et al., 2021). In terms of BMI, although regression analysis showed a significant relationship between flavoured beverage purchasing factors and BMI ($p < 0.001$), the Adjusted R^2 value was only 0.082, meaning that only 8.2% of the variation in BMI is explained by this variable, indicating that while statistically significant, the practical effect is small and supports the view that obesity is multifactorial and cannot be explained by a single dietary factor alone (Hruby & Hu, 2015; Hall, 2018).

Therefore, a comprehensive and multidimensional approach is needed to understand and address obesity effectively. It is important to involve various sectors, including health, education and public policy, in efforts to prevent and control obesity (Martínez et al., 2024). Collaboration among these sectors can increase the effectiveness of strategies implemented, thereby reducing obesity prevalence and improving public health overall (Martínez et al., 2024). In other words, these findings empirically reject a deterministic approach that places SSBs as the primary cause of obesity among university students, as is often generalized in Western literature (Malik & Hu, 2019), and instead suggest that within a university population with higher health literacy the influence of flavoured beverages on BMI is limited and likely mediated by lifestyle, physical activity and changes in low-sugar product formulations in the current market (Siow et al., 2025; Budai & Lichthammer 2021). In this context, it is important to understand that reducing sweetened beverage consumption can help control BMI and prevent obesity among university students. Participation in nutrition awareness programs and healthy lifestyle initiatives at universities also needs to be enhanced to support these efforts. Furthermore, nearly half of respondents were in the normal BMI category (49%), indicating the possible presence of health awareness and engagement in campus physical activities that contribute to energy balance.

Therefore, these findings not only enrich the literature on SSBs and obesity, but also urge future researchers to integrate environmental and cultural factors in the analysis of health behaviours and to avoid generalizing theories developed in Western contexts to tropical populations without local empirical testing. In line with the human medical ecology perspective and the socio-ecological model, obesity should be understood as an outcome of interactions among biological, behavioural, social, environmental and structural factors. Therefore, an analytical model that focuses only on flavoured beverage purchasing factors risks underestimating the complexity of obesity risk and this is reflected in the small effect size (Adjusted $R^2 = 0.082$). Future studies should integrate additional predictors such as physical activity overall dietary intake (not beverages alone), sleep patterns, academic stress, socioeconomic status and audits of the campus food environment (availability, price, promotion/marketing, vending machine placement and climatic influences on beverage choice). Layered health determinant mapping such as Dahlgren & Whitehead (1991) can be used to develop a more comprehensive ecological model.

The primary limitation of this study is the cross-sectional design, which limits causal inference; the temporal direction between flavoured beverage purchasing factors and BMI cannot be determined. In addition, self-reported data on beverage preferences/motivations and BMI may introduce recall bias and social desirability bias and may cause misclassification of obesity. Therefore, longitudinal/cohort studies with objective anthropometric measurements and validated dietary instruments are more appropriate for testing temporal relationships and strengthening causal inference. Health care implications based on a continuum: (i) Preventive:

reducing SSB exposure through sugar labelling, controlling promotions and restructuring the campus sales environment in line with WHO recommendations; (ii) Promotive: sugar literacy programs and healthy-choice nudges; (iii) Palliative: nutrition/psychological counselling support for at-risk students; (iv) Rehabilitative: structured follow-up interventions (diet plan + phased physical activity + behavioural support) to sustain lifestyle changes.

CONCLUSION

Overall, this study shows that flavoured beverage consumption is a significant practice among students at Universiti Tun Hussein Onn Malaysia (UTHM), Pagoh Campus, with a high preference for caffeinated beverages such as tea and coffee. The primary factor driving beverage purchases is not sweet taste alone, but rather a physiological need for refreshment within a tropical climate context and under high academic demands. This finding broadens the perspective of existing literature which has largely emphasised hedonic motivation as the dominant factor in sugary beverage consumption. Although statistical analysis indicates a significant relationship between flavoured beverage purchasing factors and body mass index (BMI), the low proportion of explained variance confirms that obesity among university students is a multifactorial phenomenon shaped by a combination of lifestyle factors, physical activity, the food environment and other health behaviours. Thus, the present findings reject a deterministic approach that attributes obesity to flavoured beverages as a single causal factor, instead underscoring the need for a multidimensional approach to understanding overweight risk. Theoretically, this study contributes to the enrichment of the literature on beverage choice behaviour in the context of Malaysian public universities by highlighting the role of local ecological factors. Practically, the findings provide an empirical basis for universities and policymakers to develop more targeted campus health interventions, including sugar literacy programmes, the promotion of healthier beverage options, and improvements to the campus food environment based on data. Future studies are recommended to integrate additional variables such as physical activity level, sleep patterns, academic stress and overall dietary intake to develop a more comprehensive obesity prediction model among university students.

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APPENDIX A: QUESTIONNAIRE INSTRUMENT (GOOGLE FORM)

1. Study Title: The Influence of Flavoured Beverages on Obesity among Universiti Tun Hussein Onn Malaysia (UTHM) Pagoh Students

2. Please answer all questions honestly based on your experience and habits. There are no right or wrong answers. All information is confidential and used for academic purposes only. Informed Consent: By continuing this questionnaire, you confirm that you agree to participate in the study voluntarily.

3. Section A: Respondent Demographics (6 items)

A1. Gender: Male / Female

A2. Age: (<20, 20, 21, 22, >22)

A3. Ethnicity: Malay / Chinese / Indian / Others

A4. Religion: Islam / Buddhism / Hinduism / Christianity / Others

A5. Level of Study: Diploma / Degree / Master / PhD

A6. Faculty: PPD / FAST / FTK

4. Section B: Types of Preferred Flavoured Beverages (Likert Scale of Frequency)

1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

B1. Tea-flavoured beverages

B2. Milk-flavoured beverages

B3. Fruit-flavoured beverages

B4. Soda-flavoured beverages

B5. Sports drinks

B6. Coffee-flavoured beverages

5. Section C: Factors for Purchasing Flavoured Beverages (Likert Scale of Agreement) 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree C1. I like drinking flavoured beverages because they taste good.

C2. I like drinking flavoured beverages because they taste sweet.

C3. I like drinking flavoured beverages to quench thirst.

C4. I like drinking flavoured beverages to refresh myself.

C5. I like drinking flavoured beverages so that I feel cold.

6. Section D: Body Mass Index (BMI)

Additional (BOLD): BMI formula: $BMI = \text{Weight (kg)} \div [\text{Height (m)}]^2$.

Answer options:

(a) < 18.5 (Underweight)

- (b) 18.5 – 24.9 (Normal)
- (c) 25.0 – 29.9 (Overweight)
- (d) 30.0 – 34.9 (Obesity Class 1)
- (e) > 35.0 (Obesity Class 2 and above)