FACTORS ASSOCIATED WITH BODY MASS INDEX OF STUDENTS IN THE FACULTY OF SCIENCE, CHIANG MAI UNIVERSITY, ACADEMIC YEAR 2025

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ABSTRACT

This study examined factors associated with body mass index of students in the Faculty of Science, Chiang Mai University, Academic Year 2025 from a population of 2,500 students, a sample of 150 was selected using simple random sampling. Data were collected using a questionnaire comprising four sections : personal factors, lifestyle behavioral factors, knowledge related to body mass index factors and stress factors. Data were analyzed using descriptive statistics including frequency, percentage, mean and standard deviation. Inferential statistics included the Chi-square test, Spearman's Rank Correlation Coefficient and BMI category proportions were estimated using interval estimation. The results indicated that most of the sample was classified as having normal weight, accounting for 45.33% (95% CI = 37%–53%). The mean BMI of the sample was 22.31, with the minimum BMI of 13.84 and the maximum BMI of 38.28. The analysis of association between personal factors, lifestyle behavioral factors, knowledge related to body mass index factors and stress factors with BMI revealed that only monthly income was significantly associated with BMI at the 0.05 significance level. The sample with higher monthly income tended to have higher BMI, as they had greater access to food and higher levels of food consumption.

INTRODUCTION

Overweight and obesity are increasingly recognized as important health issues among university students. During their university years, many students adopt lifestyle behaviors that may affect their body weight. These behaviors include frequent consumption of high-calorie, high-fat, and high-sugar foods, inadequate sleep, academic stress, and lower levels of physical activity, which may affect health in both the short and long term. Therefore, Body Mass Index (BMI) is widely used as a standard tool to assess body weight status and nutritional condition. In addition, BMI can serve as baseline information for examining various factors that may be associated with body weight status and can also help reflect overall health trends.

OBJECTIVES

- To study the Body Mass Index of students in the Faculty of Science, Chiang Mai University, Academic Year 2025.
- To examine the factors associated with the Body Mass Index of students in the Faculty of Science, Chiang Mai University, Academic Year 2025.
- To estimate the proportion of students in the Faculty of Science, Chiang Mai University, Academic Year 2025, classified by Body Mass Index categories.

POPULATION

The population consisted of all undergraduate students in years 1 to years 4 of the Faculty of Science, Chiang Mai University, Academic Year 2025, totaling 2,500 students. (This total excludes 52 international students)

SAMPLE

The sample size was calculated using the formula proposed by Taro Yamane (1973) at a 95% confidence level and a margin of error of 0.10. Data were collected from 150 participants to enhance reliability.

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{2,500}{1 + 2,500(0.10)^2}$$

$$n = 96.15 \approx 97$$

DATA COLLECTION

The questionnaire was used as a tool for data collection and was divided into four sections.

1. personal factors
2. lifestyle behavioral factors
3. knowledge related to body mass index factors
4. stress factors

DATA ANALYSIS

1. Descriptive Statistics
2. Chi-Square Test

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{c}\frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

3. Spearman's Rank Correlation Coeffient

$$T = r_s = 1 - \frac{6\sum_{i=1}^{n}(R(X_i) - R(Y_i))^2}{n(n^2-1)}$$

4. interval estimation

$$\hat{p} \pm z_{1-\frac{\alpha}{2}} \cdot \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

RESULT

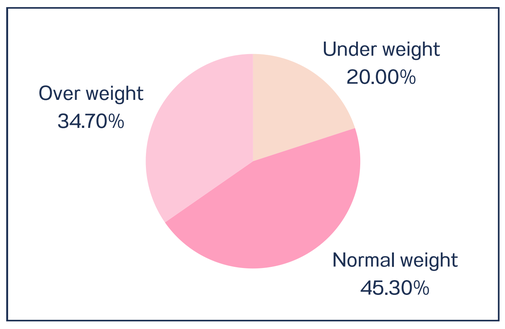


Figure 1 Body Mass Index (BMI) Data of Students in the Faculty of Science, Chiang Mai University

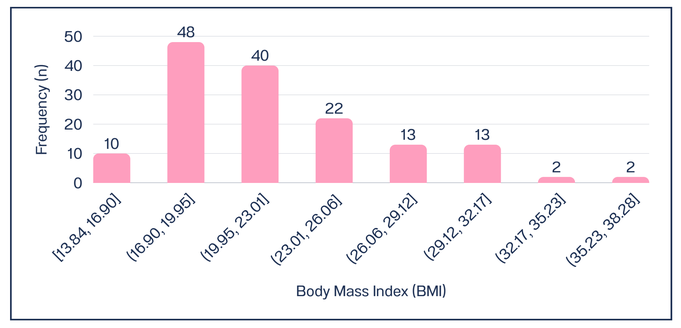


Figure 2 Distribution of Body Mass Index (BMI) of Students in the Faculty of Science, Chiang Mai University

Table 1 The Analysis of the Association of Personal Factors and Lifestyle Behavioral Factors with BMI

No.	Factor (Nominal Factor)	p-value (Chi-square Test)	No.	Factor (Nominal Factor)	p-value (Chi-square Test)
1	sex	0.367	9	breakfast	0.648
2	year	0.409	10	vegetable	0.899
3	congenital disease	0.341	11	fast food	0.108
4	accommodation	0.110	12	snack	0.880
5	monthly income	0.027*	13	last night meal	0.060
6	smoking	0.446	14	exercise	0.728
7	drinking alcohol	0.367	15	duration of sleep	0.120
8	meals	0.475			

Note : * p-value < 0.05 indicates a statistically significant association

Table 2 The Analysis of the Association of Knowledge Related to BMI Factors and Stress Factors with BMI

Factor (Ordinal Factor)	r_s	p-value
knowledge related to body mass index factors	0.002	0.984
stress factors	0.016	0.848

Table 3 Estimated Proportions Classified by Body Mass Index (BMI) Categories

BMI	Frequency (n=150)	Proportion	Lower (95% CI)	Upper (95% CI)
Under Weight (less than 18.50)	30	0.20	14	26
Normal Weight (18.50–22.99)	68	0.45	37	53
Over Weight (greater than 22.99)	52	0.35	27	42

CONCLUSION

The results revealed that most participants were in the normal weight category accounting for 45.33%, with a mean Body Mass Index (BMI) of 22.31, which falls within the normal range. These findings are consistent with the studies of Narongrit Saengkaew et al. (2010) and Natthira Phutthawong et al. (2009), which reported that most students had an overall BMI within the normal range.

Regarding factors associated with BMI, the results indicated that monthly income was the only personal factor significantly associated with BMI at the 0.05 level of significance (p = 0.027). This finding is consistent with the study of Siriporn Phisansutthichol et al. (2022), suggesting that monthly income may influence BMI, as it may affect individuals access to and consumption of food.

REFERENCES :

Phutthawong, N., et al. (2009). Factors associated with body mass index among first-year students at Naresuan University, Phitsanulok Province. https://shorturl.asia/iH5nR
Saengkaew, N., et al. (2010). Factors associated with body mass index among health science students at Naresuan University, Academic Year 2010. https://shorturl.asia/Nx2B7
Siriporn Phisansutthichol et al. (2022). Factors associated with body mass index among Nursing Personnel in Maharaj Nakorn Chiangmai Hospital. https://shorturl.asia/Ttfl2