

Campus life adaptation and dietary patterns among first-year health science students in Indonesia: a cross-sectional study

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ABSTRACT

Adaptation to campus life can be a challenging process for new students and may influence health-related behaviors, including dietary patterns. A preliminary study involving five first-year students showed that they experienced difficulties managing their dietary patterns during their first semester. However, evidence regarding the relationship between adaptation to campus life and dietary patterns among first-year health students in Indonesia remains limited. This study employed a correlational design with a cross-sectional approach and involved 36 respondents. Data were collected using the Student Adaptation to College Questionnaire (SACQ) and the Adolescent Food Habits Checklist (AFHC) and were analyzed using Spearman's rho correlation test. Most respondents were female (81%), and 69% were in the adolescent age group. The majority of respondents demonstrated a moderate level of adaptation to campus life (92%) and reported healthy dietary patterns (92%). A significant positive correlation was found between adaptation to campus life and dietary patterns ($p < 0.001$, $r = 0.734$), indicating that students with higher levels of adaptation tended to have healthier dietary patterns. These findings suggest that institutions should provide campus-based health promotion programs, including student services, counseling, stress management programs, and dietary education.

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1. INTRODUCTION

Adapting to campus life is an important process that every individual undergoes when entering higher education. Several recent studies have shown that the transition from the school environment to university requires students to adapt to a different learning system, a busier schedule, and more complex academic demands, leading to increased stress, physical fatigue, and difficulty managing study time [1], [2], [3]. This phase is an important milestone for new students. This period of change can be quite challenging for students, as entering higher education is not only about gaining knowledge and obtaining a degree. Academic and personal life need to be managed in a balanced manner. Interaction with peers and lecturers on campus is also an important aspect that can help students adjust socially and academically [4], [5]. Social interactions at university are also more diverse than those in high school. Migrant students who live far from their parents also need to adapt to the local culture and social environment [6]. A good adaptation process can support students' psychological well-being and enhance their academic achievement [7], [8].

The ability to adapt to campus life plays an indirect but significant role in lifestyle changes. The presence of class schedules, demanding academic workloads, and involvement in organizations often cause students to skip breakfast and/or other meals and choose convenience foods without considering the

nutritional requirements appropriate for their age [9]. Previous research has suggested that the limited time available to meet academic requirements during the adaptation to campus life hinders the adoption of a healthy lifestyle [10]. If these unhealthy behaviors persist, they may lead to an increased risk of obesity and non-communicable diseases such as hypertension and diabetes, as well as other health conditions, including gastritis [11], [12]. Another study has found evidence of the triple burden of malnutrition, including undernutrition, overnutrition, and anemia. Migrant students may also experience dietary acculturation, which requires adjustments to food choices and taste preferences in their new environment [13]. The unhealthy eating patterns observed during this period may stem from dietary habits established during childhood and early adolescence.

Globally, adults are advised to consume nutrient-dense foods and beverages that provide essential nutrients, including vitamins and minerals, while minimizing added sugars, saturated fats, and sodium [14]. Meanwhile, in Indonesia, dietary practices are guided by the Balanced Nutrition Guidelines, which recommend consuming a variety of foods in balanced portions, in adequate amounts, and on a regular basis [15]. Unmet nutritional needs can impair adolescent growth and development. The prevalence of gastritis among nursing students was notably high and was primarily associated with stress and dietary behaviors [16]. According to the 2018 Basic Health Research data for the Special Region of Yogyakarta, 9.07% of individuals aged 15–19 years and 5.61% of those aged 20–24 years reported not consuming vegetables on a daily basis during a one-week period [17]. These figures indicate an increase in unhealthy dietary patterns of not consuming vegetables among the 15-19 and 20-24 age groups. This age group falls into the category of late adolescence and early adulthood, which includes university students, particularly first-year students, who are the focus of this study. These findings suggest that university students may also be at risk of unhealthy eating patterns, including low vegetable consumption. Therefore, it is important to examine the dietary patterns of students, particularly those at Bethesda Yakkum School of Health Sciences.

We conducted interviews with five first-year students studying at Bethesda Yakkum School of Health Sciences to identify the challenges they faced during their transition to university life. The interview results indicated that all respondents experienced difficulties adapting at the beginning of their studies, particularly in managing their dietary habits. Their eating patterns became irregular due to academic demands and assignments, causing their meal frequency to decrease from three meals per day to one to three meals per day. Time constraints and the need to prepare meals independently led students to choose convenient foods. They also reported increased stress levels due to a heavy academic workload. Based on these findings, further research is needed to examine the relationship between adaptation to campus life and the eating patterns of first-year students at Bethesda Yakkum School of Health Sciences.

2. METHOD

2.1. Study design

This study employed a quantitative correlational design and used a cross-sectional approach. The objective of this study was to determine the relationship between adaptation to campus life and the dietary patterns of first-year students at Bethesda Yakkum School of Health Sciences. The instruments used in this study were the Student Adaptation to College Questionnaire (SACQ) and the Adolescent Food Habits Checklist (AFHC).

2.2. Study population and sampling procedure

The study population consisted of 120 first-year students enrolled in the Bachelor of Nursing (Regular), Diploma in Nursing, and Bachelor of Physiotherapy programs at Bethesda Yakkum School of Health Sciences. This study used purposive sampling based on predefined inclusion and exclusion criteria. The inclusion criteria were: i) actively enrolled students; ii) first-year students in the Bachelor of Nursing (Regular), Diploma in Nursing, or Bachelor of Physiotherapy programs; iii) willingness to participate in the study; and iv) residence away from their hometowns. The exclusion criteria were students who declined to participate and those who had been held back to a lower academic level. This study used the Arikunto formula to determine the sample size because the population size was already known. According to Arikunto, if a study population consists of fewer than 100 individuals, the entire population may be included as the sample [18]. However, if the population exceeds 100 individuals, 10–15% or 25–30% of the population may be selected as the sample [18]. The sample size was calculated as 30% of the total population, resulting in 36 respondents from the three study programs. The sample consisted of 23 students from the Bachelor of Nursing (Regular) program, 10 students from the Diploma in Nursing program, and 3 students from the Bachelor of Physiotherapy program.

2.3. Data collection and analysis

The study was conducted from July 17 to September 18, 2024, at Bethesda Yakkum School of Health Sciences, Yogyakarta, Indonesia. There was no research assistants involved in this study. Data were collected through a WhatsApp group. First, population data were obtained from the study programs. Next, each class representative was contacted to identify students who met the inclusion criteria. After identifying eligible respondents, the researcher created a WhatsApp group, shared the invitation link, and arranged a meeting schedule to explain the questionnaire completion procedures. Once the group was established, the researcher introduced the study and explained its objectives, the activity schedule, the questionnaire completion procedures, and the time allocated for participation. Subsequently, a link to the questionnaire was sent to respondents who agreed to participate.

Respondent characteristics were analyzed using frequencies and percentages. The relationship between the variables was analyzed using Spearman's rho correlation test. The significance level was set at 0.05. A p-value of α 0.05 was considered indicative of a significant relationship between adaptation to campus life and dietary patterns. Variables showing a statistically significant relationship were further interpreted based on the correlation results.

2.4. Instrument

This research used two instruments to measure campus life adaptation ability and dietary patterns.

2.4.1. Campus life adaptation ability

The instrument used to measure adaptation to campus life was the Student Adaptation to College Questionnaire (SACQ), developed by [19] and previously used in a study by [20]. This instrument consists of four dimensions of college adjustment: academic adjustment, social adjustment, personal-emotional adjustment, and goal commitment/institutional attachment. The instrument contains 67 items, including 24 items measuring academic adjustment, 20 measuring social adjustment, 15 measuring personal-emotional adjustment, and 8 measuring goal commitment/institutional attachment. The scores were categorized into three levels: low, moderate, and high adaptation. In this study, Cronbach's alpha ranged from 0.92 to 0.95, while item validity coefficients (r) ranged from 0.442 to 0.519.

2.4.2. Dietary patterns

Dietary patterns were measured using the Adolescent Food Habits Checklist (AFHC), developed by [21], [22] and previously used in Zein's study [22]. The AFHC consists of four indicators: fat and dietary fiber intake (7 items; Items 1–7), fruit and vegetable intake (5 items; Items 8–12), dietary restriction (4 items; Items 13–16), and nutrition knowledge (7 items; Items 17–23). AFHC scores were classified by comparing individual scores with the mean total score of all respondents. The Shapiro–Wilk test was used to assess data normality prior to analysis. AFHC scores greater than 424 were classified as indicating healthy dietary patterns, whereas scores of 246 or below were classified as indicating unhealthy dietary patterns. In this study, Cronbach's alpha was 0.90, and the validity coefficient (r) was 0.83.

3. RESULTS AND DISCUSSION

A total of 36 respondents were examined, and the results were analyzed.

3.1. Result

3.1.1. Univariate analysis

A total of 36 respondents participated in the study, and the data were analyzed. Among the 36 respondents, the majority were female ($n = 29$, 81%), while the remainder were male ($n = 7$, 19%). Most respondents were aged 13–19 years ($n = 25$, 69%), while 11 respondents (31%) were ≥ 20 years (Table 1). Most respondents demonstrated a moderate level of adaptation to campus life ($n = 33$, 92%), while the remaining respondents demonstrated a high level of adaptation ($n = 3$, 8%) (Table 2). Most respondents were classified as having healthy dietary patterns ($n = 33$, 92%), whereas 3 respondents (8%) were classified as having unhealthy dietary patterns (Table 3).

Table 1. Characteristic of students

Parameters		Total (n = 36)	Percentage (%)
Gender	Male	7	19
	Female	9	81
Age	Adolescents (13-19 years)	25	69
	Adult (≥ 20 years)	11	31

Table 2. Adaptation ability of campus life

Parameters	Total (n = 36)	Percentage (%)
Low	0	0
Moderate	33	92
Higher	3	8

Table 3. Dietary patterns

Parameters	Total (n = 36)	Percentage (%)
Health	33	92
Unhealthy	3	8

3.1.2. Bivariate analysis

The correlation between adaptation to campus life and dietary patterns among first-year students is presented in Table 4. The mean score for adaptation to campus life was 371.56 (SD = 37.748). The mean dietary pattern score was 15.47, indicating relatively low variability among respondents. The adaptation-to-campus-life scores ranged from 318 to 460, while the dietary pattern scores ranged from 10 to 20 (Table 4).

Based on the results of Spearman's rank correlation test, a statistically significant relationship was found between the variables ($p < 0.001$). Therefore, the null hypothesis was rejected. The correlation coefficient was 0.734, indicating a strong positive correlation between the variables. These findings indicate that higher levels of adaptation to campus life were associated with healthier dietary patterns among students.

Table 4. The correlation of the variables

Variable	Mean $\pm$ SD	Min	Max	Sign. 2 tailed Spearman rank	Coefficient relationship
Adaptation ability of campus life	371.56 $\pm$ 37.748	318	460	0.000	0.734
Diet patterns	15.472 $\pm$ 2.2359	10	20		

3.2. Discussion

The results indicated that students at Bethesda Yakkum School of Health Sciences were predominantly female. Women tend to demonstrate better social adjustment, which has been associated with higher levels of empathy and sympathy [23]. This finding is supported by a literature review [24], which reported that women generally exhibit higher levels of empathy than men. A study by Ademi and Loshkovska [25] reported significant differences between women and men in both achievement and engagement. The authors suggested that women adapt more easily to new environments than men. They also reported differences in academic outcomes between women and men. Regarding empathy, another study reported that although women showed higher empathy scores than men, the difference was not statistically significant [26]. This may be influenced by Indonesian cultural factors that promote the development of empathetic behavior among women [27].

The age distribution showed that most respondents were 13–19 years old. A previous study [19] reported that most first-year university students fall within the late adolescent age category. Adolescence is a developmental period characterized by substantial psychological and social changes, particularly when students transition from school to university and must adapt to a new environment [28]. These findings are consistent with a study conducted at the Faculty of Health Sciences, Respati University, Yogyakarta [29], which reported that 88.2% of respondents were aged 17–19 years, an age range classified as adolescence. This developmental phase occupies a greater portion of the life course than ever before [30].

Another finding of this study was that most respondents demonstrated a moderate level of adaptation to campus life. Upon entering college, many students face challenges during the adaptation process. A previous study [31] found that first-year students often experienced difficulties understanding academic procedures, participating in case-based learning, speaking and working effectively in groups, managing heavy workloads, and taking greater responsibility for their learning. If these difficulties are not addressed appropriately, they may contribute to psychological problems. A previous study [24] reported that approximately one-third of first-year students experienced clinically significant symptoms of depression and anxiety, including sleep problems, hazardous substance use, lack of regular exercise, reduced social support, low self-esteem, and high perceived stress. To cope with these challenges, students use various coping mechanisms, and self-adjustment is influenced by both adaptive and maladaptive coping strategies [25]. Students' adaptation to campus life may be influenced by various factors, including social identity, self-efficacy, self-regulated learning, academic grit, academic flow, peer support, and parent–child relationships

[26]. Family support also plays a key role in students' ability to navigate the challenges of university life. This is important because it helps students build the emotional resilience needed to adapt successfully [32].

Regarding dietary patterns, most respondents were classified in the healthy category. This positive trend may reduce the risk of gastritis, indicating that respondents generally maintain healthy dietary habits. Maintaining a healthy diet is crucial for overall well-being; furthermore, adopting nutritious eating habits has been shown to enhance academic performance [33]. This finding aligns with previous research reporting that a healthy lifestyle is a significant predictor of academic success [34].

Adaptation to campus life refers to an individual's ability to adjust to the university environment, including its academic, social, personal, emotional, and institutional demands. An important aspect of adaptation is personal adjustment, which enables individuals to cope with internal changes, including changes in eating patterns [35]. First-year students are likely to experience culture shock; however, adapting to a new environment may produce positive psychological effects and contribute to personal development and resilience [36]. The study concluded that students with higher psychological well-being were better able to overcome culture shock and viewed it as a learning opportunity that contributed to their growth and development. Furthermore, effective adaptation to cultural changes may enhance psychological well-being and improve academic performance. Although most respondents maintained healthy dietary patterns, 8% still exhibited unhealthy dietary behaviors. Poor nutritional intake can lead to reduced concentration and physical weakness, as well as health problems such as gastritis and long-term conditions including obesity, hypertension, diabetes mellitus, and cardiovascular disease [37], [38]. Several studies have shown that gastritis is a common health problem among young people, particularly students, and is often exacerbated by excessive stress. Symptoms include heartburn, nausea, vomiting, and insomnia [39], [40].

The strong correlation suggests that students who adapt better to their new environment are more likely to maintain healthier dietary patterns. Conversely, the less adaptive students are, the higher their stress level. Stress may arise when students face substantial academic demands. According to stress and coping theory, individuals engage in cognitive appraisal when faced with a particular stressor [41]. The perceived severity of a problem may influence the type of coping strategy individuals use, whether adaptive or maladaptive. These findings highlight the importance of developing strategies that facilitate students' integration into the academic environment, thereby supporting learning and promoting mental well-being [42]. The health consequences of chronic stress depend on an individual's coping style and resilience when dealing with stressful situations [43]. Another finding suggests that effective stress management can reduce stress levels [44]. The effectiveness of coping strategies is influenced by various factors, including social support. Students who receive emotional, informational, and instrumental support from family members, peers, and mentors tend to feel more motivated and less isolated [45], [46]. The findings of this study suggest that effective coping may support students' ability to adapt to the campus environment.

This study found a strong correlation between adaptation to campus life and dietary patterns, suggesting that students who adapt more successfully tend to maintain healthier eating patterns. Adaptation may play an important role in shaping health-related behaviors. This finding is consistent with the theory of planned behavior, which proposes that behavior is influenced by attitudes, subjective norms, and perceived behavioral control [47]. As students in health-related programs, the respondents may possess sufficient health knowledge to balance academic responsibilities with their physical needs, including maintaining regular mealtimes. Students may recognize the importance of healthy behaviors in supporting their academic activities. Healthy dietary patterns may also be supported by environmental factors, such as the availability of healthy food, supportive facilities, and positive peer influence. This finding is consistent with the view that behavior is influenced by interactions among personal factors, environmental conditions, and behavioral processes [48]. Health behaviors play a vital role in both mental and physical health [49], [50].

As a source of social support, the institution should provide student services, counseling, stress management programs, and dietary education. A previous study reported that health centers support government efforts by implementing promotive and preventive measures in order to increase public awareness and encourage individuals to manage their health independently [51], [52]. In this context, the campus environment contributes to shaping healthier behaviors. In addition, stress management services can be supported through regular assessments using appropriate instruments. At Bethesda Yakkum School of Health Sciences, such screening has been conducted for students experiencing mild, moderate, severe, and very severe levels of stress. Students also receive dietary education as part of their health-related coursework.

This study was initially planned as an in-person survey; however, because many respondents had returned to their hometowns, data collection was conducted using an online questionnaire. As a result, the researchers were unable to explore responses in greater depth or directly observe participants while they completed the questionnaire. This method of data collection may have introduced response bias and self-report bias. Respondents may have underreported or overreported their adaptation experiences and dietary behaviors. To minimize these biases, respondents were assured of anonymity and confidentiality. Another limitation is that the study included only healthy students and involved a relatively small sample of 36

respondents, which may limit the generalizability of the findings. Therefore, future research should employ a longitudinal design and examine student adaptation from additional perspectives, including environmental factors, social support, and the role of institutions in promoting healthy behaviors, in order to gain a more comprehensive understanding of the adaptation process.

3. CONCLUSION

Based on this research, it can be concluded that the 36 respondents at Bethesda Yakkum Nursing Health Science included both females and males and were in adolescent and adult age categories. Most respondents demonstrated a moderate level of adaptation to campus life and reported healthy dietary patterns. The study found a significant and strong correlation between adaptation to campus life and dietary patterns among first-year students. These findings indicate that students with higher levels of adaptation to campus life tend to have healthier dietary patterns. The findings also suggest that institutions should provide campus-based health promotion programs, including student services, counseling, stress management programs, and dietary education. These initiatives may help students recognize their nutritional needs, manage stress through adaptive coping strategies, and maintain their mental well-being while adjusting to campus life.

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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 : Conceptualization	I : Investigation	Vi : Visualization
M : Methodology	R : Resources	Su : Supervision
So : Software	D : Data Curation	P : Project administration
Va : Validation	O : Writing - Original Draft	Fu : Funding acquisition
Fo : Formal analysis	E : Writing - Review & Editing	

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

The author informed consent was obtained from each respondent.

ETHICAL APPROVAL

This study received ethical approval from the Health Research Ethics Commission of Bethesda Yakkum School of Health Sciences (Approval No. 128/KEPK.02.01/VIII/2024). All participant data were kept confidential. Respondents who completed the questionnaire received a small token of appreciation in the form of electronic money through platforms such as ShopeePay, DANA, or GoPay.

DATA AVAILABILITY

The authors confirm that the data supporting the findings of this study are available within the article [and/or its supplementary materials].

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