

## A Summary of Medical Students' Preference for Healthy Campus Canteen Menus

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### Abstract

The canteen is one of the supporting facilities on campus. The availability of nutritious menus is of great assistance in meeting the nutritional needs of the academic community in support of its learning activities. However, not all campus canteens meet the criteria for healthy canteens. Students' input is required for the establishment of a healthy canteen, especially regarding the menu. This study aims to explore the canteen menu preferences of medical students at Universitas Sriwijaya to develop a healthy canteen. This study is an observational survey, and Google Form is used to collect data through an online questionnaire. The majority of the 646 samples (72.4 %) were females, lived within the family house (52.8 %), had meals from the canteen (70.1 %), were likely to buy ready-to-eat food (65 %), and spent their daily pocket money between IDR 20,000 to 30,000 (34.1 %). A part of them was pleased with the former canteen's menu, including flavor, presentation, menu variants, accessibility to desired menus, pricing, and nutrition content. The majority of students prefer to purchase the main menu (85.1 %), drink without added sugar (74.8%), get the seller's predetermined food portion (54%), and select a canteen that regulates unhealthy menu limitations (46.9 %), which provides a complete menu list with prices and nutritional content (49.8 %). Most students prefer menus that fill them up, no added sugar drinks, predetermined menu portions, limiting menus that are considered unhealthy, and clear nutritional content and price information on the menu list.

**Keywords:** Healthy canteen menus; Medical student; Preferences

### Introduction

A healthy canteen provides food and beverage menus by considering the provisions of food, people, places, and equipment based on bacteriological, chemical, and physical requirements to prevent health problems (Menteri Kesehatan RI 2003). It also anticipates a disruption in nutrition and refreshment from the time the food is prepared, packaged, and transported until consumed (Mahmudiono et al. 2020; Rahman et al. 2018). According to the WHO in (Hilger, Loerbroks, and Diehl 2017), healthy eating patterns feature fruits, vegetables, and whole grains in their daily diet while avoiding foods high in fat, salt, and refined carbohydrates (Hilger et al. 2017). Every time food is consumed, according to Indonesian Health Ministry Regulation No. 41 of 2014 on Balanced Nutrition, the food menu will be composed of more than one type of food group, including staple foods, side dishes, vegetables, fruits, and drinks.

Daily caloric needs are directed day by day, according to Indonesian Health Ministry Regulation Number 28 of 2019. Male understudies between the ages of 18 and 29 require 2650 kcal, whereas female understudies between the ages of 18–29 require 2100 kcal and those between the ages of 19–29 require 2250 kcal. However, there are still significant differences between recommended nutrition and nutrition consumed by students on a regular basis.

The limit for added sugar intake, both flavored food, and drinks or sweet drinks, is less than 10% of the total energy requirement (Sousa et al., 2020; WHO, 2020). When associated with calories per day for students, it is found that male students need 265 kcal and female students need 210-225 kcal. The total fat requirement is less than 25% by prioritizing unsaturated fat (Menteri Kesehatan RI 2014; WHO 2020). When associated with calories, the amount for male students is 662.5 kcal, and for female students is 525-562.5 kcal. Salt with an iodine content is less than 5 g or equivalent to 1

teaspoon per day (Menteri Kesehatan RI, 2014; WHO, 2020). In addition to WHO, regulations direct sugar restrictions in ready-to-consume drinks, namely the Regulation of the Food and Drug Supervisory Agency of the Republic of Indonesia No. 22 of 2019, with 6 grams per 100 mL (Badan Pengawas Obat dan Makanan Republik Indonesia 2019). Additional food seasoning is a food additive that has been determined by the FAO/WHO portion of its use that a person may not consume MSG exceeding 120 mg/kg BW/day (Sulastrri, 2017). As for PP No.69 of 1999, the limit for MSG consumption that can still be tolerated is set, ranging from 0.3-1 g per day (Sulastrri, 2017).

One of the facilities that are usually available on campus is the canteen. However, not all institutes offer arrangements for the food sold on their menus, including the Medical Faculty of Universitas Sriwijaya. In fact, for the medical faculty, this is essential, particularly in terms of providing nutritious food. Candidates for doctors, medical professionals, and other health workers who work in the general vicinity of the medical faculty would all benefit from a nutritious food menu to support their activities. This study aimed to describe student preferences regarding healthy canteen menus at Medical Faculty, Universitas Sriwijaya.

## Methods

In this research with a cross-sectional design, all students of the medical profession study program and medical education study program (at least in the fifth semester) were eligible to become participants. Participants who did not have experience buying food in the campus canteen, and were not willing to take part in the study were excluded from this study.

The survey was administered to 646 participants who were willing to participate using Google Forms. Data collection was carried out during September–October 2021. The questionnaire consists of questions about respondent characteristics that affect food preferences, respondents' level of satisfaction with the existing canteen, food preferences based on the type of dish, preferences for beverages based on added sugar, preferences for determining food and beverage portions, and student preferences regarding healthy canteen menu

The collected data were processed using the Statistical Package for Social Science (SPSS) version 24 program. Univariate analysis was carried out, and the data were presented in the form of distribution tables and narratives. This research was authorized by the Medical and Health Research Ethics Committee, Faculty of Medicine, Universitas Sriwijaya, with approval number 148-2021.

## Results

Respondents consisted of students from the 2016-2019 class. Table 1 shows the characteristics of respondents as factors that influence food preferences. From the 646 samples, 72.4% were female, 52.8% live with closest family's house, prepare food through having meals in the canteen every day (70.1%), have access to get food by buying ready-to-eat food (65%), and spent daily pocket money in range IDR 20,000-30,000 (34.1%).

**Table 1.** The distribution of respondents based on factors that influence students' food preferences

Preference Factor	Total	
	n	%
<b>Sex</b>		
Male	178	27.6
Female	468	72.4
<b>Place to live</b>		
Boarding House	301	46.6
Closest Family's House	341	52.8
Private House	4	0.6
<b>Ability to Prepare Food</b>		
Buy ready-to-eat food	420	65
Cook by themselves	226	35
<b>Access to Food</b>		
Go to canteen	453	70.1
Online delivery	98	15.2
Bring lunch box	95	14.7
<b>Daily pocket money</b>		
<20.000	55	8.5
20.000-30.000	220	34.1
31.000-40.000	85	13.2
41.000-50.000	153	23.7
51.000-100.000	115	17.8
>100.000	18	2.8

**Table 2.** The distribution of respondents based on the level of satisfaction with the menu

Student Satisfaction Level		Total	
		n (%) Satisfied	n (%) Not Satisfied
<b>Food Menu</b>	Taste	590 (91.3%)	56 (8.7%)
	Appearance	468 (72.4%)	178 (27.6%)
	Variations of the Menu	341 (52.8%)	305 (47.2%)
	Accessibility of Requested Menus	480 (74.3%)	166 (25.7%)
	Cost	527 (81.6%)	119 (18.4%)
	Nutrient content	355 (55%)	291 (45%)
<b>Beverage Menu</b>	Taste	575 (89%)	71 (11%)
	Appearance	497 (76.9%)	149 (23.1%)
	Variations of The Menu	370 (57.3%)	276 (42.7%)
	Accessibility of Requested Menus	485 (75.1%)	161 (24.9%)
	Cost	498 (77.1%)	148 (22.9%)
	Nutrient content	398 (61.6%)	249 (38.4%)

Table 2 shows that most of the respondents tend to be satisfied with menu of the existing canteen, including taste, appearance, variations of the menu, accessibility of requested menus, cost, and dietary substance.

Respondents were shown images of 24 different types of food, including main meals and snacks, as well



as 10 different types of drinks. Respondents were instructed to select three items of foods and beverages from each list. Table 3 shows that most of the respondents chose the main menu type, with the most menu choices, namely Fried Chicken with Rice and Vegetables, Meatballs, and Fried Rice. Meanwhile, respondents prefer drinks without added sugar. The beverages that are widely chosen were Bottled Mineral Water, Fruit Juices, and High-temperature Milk (Table 3).

**Table 3.** The distribution of foods and drinks preferences

Student Preferences	Total	
	n	%
<b>Food</b>		
Main meal	550	85.1
Snack	96	14.9
<b>Drinks</b>		
Added sugar	163	25.2
Without added sugar	483	74.8

**Table 4.** The distribution of portion arrangements for food and drink provided

Portion Arrangements	Total	
	n	%
Determined by the seller	349	54
Determined by the buyer	297	46

Table 4 shows that more respondents like food and drink served with the portion determined by the seller.

**Table 5.** The description of healthy canteen menu according to respondents

The description of Healthy Canteen Menus	Jumlah	
	n	%
<b>Menu for Sale</b>		
All of them must be a healthy menu	199	30.8
Unhealthy menu restrictions	303	46.9
There are no menu restrictions	144	22.3
<b>List of Menu</b>		
No need for a menu list	15	2.3
There is a menu list	23	3.6
There is a menu and cost list	286	44.3
There is a menu list, cost, and dietary substance	322	49.8

Table 5 shows the distribution of student preferences regarding healthy canteen menus. The presence of unhealthy menu limits is preferred by respondents. They also want a complete menu list along with the price and nutritional content of food and drinks in a healthy canteen.

## Discussion

### Student Characteristic

The results show that most of the class students of

2016-2019 were 468 (72.4%) females. In line with the research that shows the Faculty of Medicine is dominated by the female population (Khursheed & Baig, 2014; Li et al., 2018; Sutjiato & Tucunan, 2015).

Most students lived in the Closest family's house, as many as 341 (52.8%). This study is in line with research that states that students mostly live with the closest people than live in boarding houses or other residential places (Legiran & Bellinawati, 2015; Sutjiato & Tucunan, 2015).

Students preferred to eat meals at the canteen, as many as 453 (70.1%) people, with most students, used access to food through the purchase of ready-to-eat food as many as 420 (65%) people, and spent a daily allowance of IDR 20,000-IDR 30,000 was obtained by 220 (34.1%) people. The research states that females prefer to make themselves their food because of the physical priority of bringing food supplies. Students' pocket spending is nominal that is classified as low to medium (Hilger et al., 2017; Jauziyah et al., 2021). However, this study shows that most females got meals from the canteen rather than bringing food supplies. This event is because of the hectic class schedule, especially for students from the Medical Education Program, the desire of students to save time and money, and the desire to choose their food (Czarniecka-skubina et al., 2019; Fonseca et al., 2020; Hilger et al., 2017).

In a cross-sectional study conducted by Hilger et al. (2017) on students in Germany, it was found that only a few of the population consumed a healthy diet, namely eating vegetables, salads, and fruit. College students, especially males, tend to eat fast food, such as pasta and french fries. A different study from the retrospective cohort study by Sousa et al. (2020) and the cross-sectional study by Djannah (2020) approached students' habits of consuming soft drinks by obtaining consumption of 230-240.6 calories per day or 100 grams per day and sweet drinks for 100 calories per day. This is in stark contrast to the limit value for flavored drink consumption, which is 10% of the total energy requirement, or if calculated, it is 265 kcal for males and 210-225 kcal for females per day. Another problem raised in the cross-sectional study by Si Hassen et al. (2018) is that snacks are consumed on average with an energy density of 222.2 kcal/100 g. This is also contrary to the energy density limit of consuming snacks, which is 50 g or 10% of the total energy requirement, 265 kcal for males and 210-225 kcal for females.

Research results from the Center for Physical Quality Development of the Ministry of National Education in 2007 showed that of 640 educational institutions in Indonesia, 40% do not have an unhealthy canteen, and 60% have a canteen, with 84.3% of them far from a healthy canteen that one of the criteria is the procurement of healthy menus. One of the impacts of

eating food in the canteen is that an error in the food menu can lead to junk food. These foods are rich in calories, but low in micronutrients, such as vitamins, minerals, amino acids, and fiber, which will impact the digestive and cardiovascular systems due to high trans fat and sugar. In addition, it will affect other systems, such as the respiratory system, central nervous system, skin, and bones. Starting the consumption of junk food causes high levels of saturated fat, salt, and sugar to accumulate, exacerbated by the enjoyment of food that causes addiction, which results in obesity, diabetes, and hypertension. As a result of the accumulation of fat, salt, and sugar will interfere with the transportation of energy and oxygen, and lead to further complications, namely heart disease, stroke, decreased kidney function, impaired concentration, and others (Wani et al., 2020; Ali et al., 2020).

### **The Level of Student Satisfaction of Menu in the Canteen**

The results showed students were satisfied with the menu's taste, menu variations, menu availability, suitability of menu prices, and nutritional content of the campus canteen before the pandemic of COVID-19. This study is in line with studies that state allowance of the existence of factors that affect the quality of food and beverages traded in the canteen, namely taste, price suitability, presentation appearance, menu variations, the number of servings, and content of nutrition in food and drinks (Kustiyoasih et al., 2017; Wulansari et al., 2014).

### **Student Food Preference**

Based on the results of this study, student preferences led to the main food for applying healthy canteen menu, as many as 550 (85.1%) people with the most choice of Fried Chicken with rice and vegetables, Meatballs, and Fried Rice. The results of this study contradict the research that states that university students, especially the male gender, tend to consume fast food, such as pasta and french fries (Hilger et al. 2017). Both genders have the same food preferences because of the tight class schedule, especially students from the Medical Education Study Program, the desire of students to save time and money, and the desire to choose their food (Czarniecka-skubina et al., 2019; Fonseca et al., 2020; Hilger et al., 2017).

### **Student Beverage Preference**

Based on the results, student preferences led to snacks without added sugar for applying healthy canteen menu as many as 483 (74.8%) people with the highest choice of Bottled Mineral Water, Fruit Juices,

and High-temperature Milk. The results of this study contradict the study of Sousa et al. (2020) and Djannah (2020), which stated that students preferred the consumption of drinks with added sugar, mainly soft drinks, because of the generalization of student knowledge, especially students from the world of health, and for cost savings (Djannah & Matahari, 2020; Sousa et al., 2020).

### **Preference for Food and Beverage Portions from the Canteen**

As many as 397 (54%) students preferred the portion menu in applying healthy canteen that by the seller's determined. In line with WHO recommendations and Indonesian Health Ministry Regulation No. 41 of 2014, which regulates the limit of added sugar intake, both food, and flavored drinks or sweet drinks, adjusted to students' average total energy needs. This recommendation will make it difficult for students to determine their unit portion of the menu. The campus canteen should be provided with the provision of determining menu portions based on the nutritional needs of adults in general. The challenge of the different needs of each individual can be overcome by providing several choices of portions (small, medium, large) to buyers. Canteens play an essential part in students' dietary intake, and a shortage of nutrients on the menus could contribute to nutrient deficiencies (Sakai et al., 2022).

### **Student Preferences regarding Menus for Sale and Menu Lists**

The results showed that as many as 303 (46.9%) students preferred the limitation of unhealthy menus from the menus sold, with as many as 322 (49.8%) people choosing the application of a menu list, cost, and dietary substances in the implementation of the healthy canteen in the campus. This study can adapt the performance of canteens in Singapore, which the government regulates by applying the labeling of nutritional content on the menu list, which leads to healthier choices, even though there are still menu choices that are not good for consumption (HPB, 2017). This study also aligns with Haynes et al. (2020), which states a grouping of menus based on the nutritional content with a red-light system in canteens in Australia. The students chose to limit unhealthy snack menus and a menu list, consisting of a menu list, cost, and dietary substances. Therefore, students can find out in full the menu of snacks that they will buy and choose their eating and drinking needs according to students' preferences to lead to healthier choices (Sakai et al., 2022).

## Conclusion

Most medical students of Universitas Sriwijaya eat in the campus canteen. Therefore, the campus canteen has a lot of potential as a facility that can assist medical students to meet their nutritional needs. Most of the students' answer choices show that they know how to make healthy food choices. Students prefer a menu with filling foods and low-sugar drinks. They also think that unhealthy menus should be limited and that the menu list should include nutritional information. Students prefer simplicity, where the menu sellers decide how much to serve. The results of this study will guide the campus in developing a canteen that meets the criteria for a healthy canteen, as determined by the menu.

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## Author Contribution and Competing Interest

The first author contributed to collecting and analyzing data, including preparing the manuscript. The second author contributed as an initiator of the research idea, drafter, data curation, methodology, data analysis, supervision, and preparing the manuscript. The third author contributed as a drafter, to data curation, methodology, data analysis, and supervision. The fourth dan fifth author contributed to data analysis and methodology.

## References

- Ali Hassan S, Bhateja S, Arora G, Prathyusha F. Impact of junk food on health. *J Manag Res Anal.* 2020;7(2):57–9.
- Badan Pengawas Obat dan Makanan Republik Indonesia. (2019). Peraturan Badan Pengawas Obat Dan Makanan Nomor 22 Tahun 2019 Tentang Informasi Nilai Gizi Pada Label Pangan Olahan. *Badan Pengawas Obat Dan Makanan,* 53, 1689–1699.
- Czarniecka-skubina, E., Hanna, G., & Laskowski, W. (2019). *Consumer Choices and Service Quality in the University Canteens in Warsaw , Poland.* 1–19.
- Djannah, S. N., & Matahari, R. (2020). Social aspects role and the behavior of drinking water among students in a private university. *International Journal of Evaluation and Research in Education,* 9(2), 374–378. <https://doi.org/10.11591/ijere.v9i2.20432>
- Fonseca, L. B., Pereira, L. P., Rodrigues, P. R. M., Andrade, A. C. D. S., Muraro, A. P., Gorgulho, B. M., Pereira, R. A., & Ferreira, M. G. (2020). Food consumption on campus is associated with meal eating patterns among college students. *British Journal of Nutrition.* <https://doi.org/10.1017/S0007114520003761>
- Haynes, A., Morley, B., Dixon, H., Scully, M., McAleese, A., Gascoyne, C., Busbridge, R., Cigognini, M., Regev, I., & Wakefield, M. (2020). Secondary school canteens in Australia: Analysis of canteen menus from a repeated cross-sectional national survey. *Public Health Nutrition.* <https://doi.org/10.1017/S1368980020003535>
- Hilger, J., Loerbroks, A., & Diehl, K. (2017). Eating behaviour of university students in Germany: Dietary intake, barriers to healthy eating and changes in eating behaviour since the time of matriculation. *Appetite,* 109, 100–107. <https://doi.org/10.1016/j.appet.2016.11.016>
- HPB. (2017). Healthier Dining Programme. *Health Promotion Board.*
- Jauziyah, S., Nuryanto, N., Tsani, A. F. A., & Purwanti, R. (2021). Pengetahuan Gizi Dan Cara Mendapatkan Makanan Berhubungan Dengan Kebiasaan Makan Mahasiswa Universitas Diponegoro. *Journal of Nutrition College,* 10(1), 72–81. <https://doi.org/10.14710/jnc.v10i1.30428>
- Khursheed, I., & Baig, L. (2014). Students' perceptions of educational environment of a private medical school in Pakistan. *Journal of the Pakistan Medical Association,* 64(11), 1244–1249.
- Kustiyoasih, M. P., Adriani, M., & Nindya, T. S. (2017). Penyelenggaraan Makanan Dan Kepuasan Konsumen Di Kantin Lantai 2 Rumah Sakit Universitas Airlangga Surabaya. *Media Gizi Indonesia,* 11(1), 11. <https://doi.org/10.20473/mgi.v11i1.11-16>
- Legiran, A. M. Z., & Bellinawati, N. (2015). *Faktor Risiko Stres dan Perbedaannya pada Mahasiswa Berbagai Angkatan di Fakultas Kedokteran Universitas Muhammadiyah Palembang.* 2(2), 197–202. <https://doi.org/10.1063/1.3106611>
- Li, D., Xu, H., Kang, M., & Ma, S. (2018). Empathy in Chinese eight-year medical program students: Differences by school year, educational stage, and future career preference. *BMC Medical Education,* 18(1), 1–9. <https://doi.org/10.1186/s12909-018-1348-2>
- Menteri Kesehatan RI. (2003). Keputusan Menteri Kesehatan Republik Indonesia Nomor 1098/Menkes/Skni/2003 Tentang Persyaratan Hygiene Sanitasi Rumah Makan Dan Restoran. *Keputusan Menteri Kesehatan RI,* 1–16.
- Menteri Kesehatan RI. (2014). *Peraturan Menteri Kesehatan RI Nomor 41 tahun 2014 tentang Pedoman Gizi Seimbang.* 1–96.
- Permatasari TAE, Nurkamalia, Astin NM. Analisis Dukungan Institusi Terhadap Penyelenggaraan

- Kantin Sehat Pada Mahasiswa Di Universitas Negeri Dan Swasta Di Jakarta. *IAKMI J Kesehat Masy Indones.* 2020;1(1):17–24.
- Sakai, Y., Rahayu, Y. Y. S., & Araki, T. (2022). Nutritional Value of Canteen Menus and Dietary Habits and Intakes of University Students in Indonesia. *Nutrients*, 14(9). <https://doi.org/10.3390/NU14091911>
- Sousa, A., Sych, J., Rohrmann, S., & Faeh, D. (2020). The importance of sweet beverage definitions when targeting health policies—the case of Switzerland. *Nutrients*, 12(7), 1–18. <https://doi.org/10.3390/nu12071976>
- Sulastri, S. (2017). Analisis Kadar Monosodium Glutamat (MSG) pada Bumbu Mie Instan yang Dipasarkan di Koperasi Wisata Universitas Indonesia Timur. *Jurnal Media Laboran*, 7(1 SE-Articles).
- Sutjiato, M., & Tucunan, G. D. K. a a T. (2015). Hubungan Faktor Internal dan Eksternal dengan Tingkat Stress pada Mahasiswa Fakultas Kedokteran Universitas Sam Ratulangi Manado. *Jikmu*, 5(1), 30–42.
- Wani P Swapnil. Impact of Fast Food Consumption on Health. *Int J Recent Trends Bus Tour* [Internet]. 2020;(April):79–83.
- WHO. (2020). *Healthy Diet*.
- Wulansari, A., Setiawan, B., & Sinaga, T. (2014). Penyelenggaraan Makanan Dan Tingkat Kepuasan Konsumen Di Kantin Zea Mays Institut Pertanian Bogor. *Jurnal Gizi Dan Pangan*, 8(2), 151. <https://doi.org/10.25182/jgp.2013.8.2.151-158>

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