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Perceptions of Medical and Nursing Students on Incorporating Nutrition into Standard Care Practice: Strengthening Nutrition Education in Healthcare Training

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Abstract

Lifestyle modification is a common preventive strategy used by healthcare professionals to manage non-communicable diseases (NCDs), yet the demand for related knowledge in medical education remains insufficiently understood. This study aimed to determine the perceptions of future doctors and nurses regarding the incorporation of nutrition into standard care practices, reflecting their desires for related knowledge. A total of 352 medical (years 1 to 5) and nursing (years 1 to 4) students from the Faculty of Medicine and Health Sciences at the University Malaysia Sarawak (UNIMAS) were recruited. Information regarding demographic characteristics, as well as perceptions of nutrition in routine care and clinical behaviors, was assessed using a self-administered questionnaire circulated online via Google Forms. Results showed that almost all students expressed positive perceptions regarding the incorporation of preventative healthcare, nutrition counseling, and nutritional assessment during routine care. Similarly, respondents perceived performing nutritional counseling and assessments for patients with NCDs as important and acceptable. No significant differences in the mean perception scores of nutrition in routine care and clinical behaviors were found between programs and genders. In conclusion, the findings highlight the need to strengthen nutrition education with scientifically grounded content for future doctors and nurses, especially during their undergraduate studies.

***Keywords**: Nutrition education, Medical and nursing students, Non-communicable diseases (NCDs), Perception, Preventive care*

1. INTRODUCTION

Overweight and obesity are defined as "*abnormal or excessive fat accumulation that may impair health*" (World Health Organization [WHO], 2021a). The global prevalence rate of obesity has tripled from 1975 to 2016. For the past decade, overweight and obesity have been rampant in both developed and developing countries (Ford et al., 2017; Ng et al., 2014; Żukiewicz-Sobczak et al., 2014). Globally, an increasing trend has been reported among adults of both sexes, with an increase from 28.8% in 1980 among males to 36.9% in 2013. Similarly, among females, the prevalence increased from 29.8% in 1980 to 38.0% in 2013 (Ng et al., 2014). Consistent with the estimated prevalence of the WHO, it was reported that 1.9 billion adults (18 years old or older), or 39%, were overweight. Among the overweight population, more than 650 million individuals (13%) were obese in 2016 (WHO, 2021a).

Among children and adolescents (2 to 19 years old) in developed countries, 23.8% of boys and 22.6% of girls were categorized as overweight and obese in 2013, representing an increase from 16.9% and 16.2% in 1980. Concurrently, there was an increasing trend observed among boys (from 8.1% in

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1980 to 12.9% in 2013) and girls (from 8.4% in 1980 to 13.4% in 2013) in developing countries. In Malaysia, one in two adults were overweight or obese with abdominal obesity, and 29.8% of children aged 5 to 17 years were reported to be overweight (15.0%) and obese (14.8%) (Institute of Public Health [IPH], 2020).

Overweight and obesity pose serious global health concerns due to their association with numerous chronic conditions, including diabetes, cardiovascular diseases, and certain cancers (Kinlen et al., 2017). In Malaysia, rising obesity rates contribute to a significant disease burden, with millions affected by diabetes, hypertension, and high cholesterol, alongside increasing household healthcare expenses (IPH, 2020). These trends highlight the urgent need for effective nutritional interventions to curb the growth of non-communicable diseases. As obesity is largely driven by modifiable behavioral and environmental factors (Cooper et al., 2018; Kadam et al., 2021; Safaei et al., 2021; Thaker, 2017; Trandafir & Temneanu, 2016), evidence supports lifestyle interventions as effective strategies for weight management and reducing related health risks (Borek et al., 2018; WHO, 2021b).

Nutrition knowledge may play a pivotal role in the prevention and management of patients. Nutrition knowledge is commonly disseminated to patients through various channels such as circles of friends, social media, hospitals, and television media (Bian et al., 2021). Hospitals, in particular, present an interesting area for exploration. Healthcare providers, including physicians, doctors, and nurses, play a crucial role in preventing the further deterioration of non-communicable diseases as they provide consultations to patients, encompassing nutrition-related preventive strategies. The transfer of nutritional knowledge from healthcare workers to patients is practical and should be recommended, given that a majority of Malaysian adults tend to seek treatment from health practitioners when experiencing any discomfort (Dawood et al., 2017; Mohd Noh et al., 2022).

One major concern in addressing nutrition in clinical care is the readiness of healthcare workers, particularly their level of nutritional knowledge. A study in a Penang tertiary hospital revealed that only 31.6% of doctors and 15.3% of pharmacists had adequate knowledge in nutrition support (Karim et al., 2015), with similar findings reported in Pakistan (Iqbal et al., 2015). This may stem from the insufficient integration of nutrition in medical education, as highlighted by a systematic review of 24 studies showing a lack of early exposure to nutrition, resulting in poor confidence and skills among healthcare providers (Crowley et al., 2019). In the UK, nearly two-thirds of students and four-fifths of doctors reported receiving less than two hours of nutrition training, and only 14% of doctors felt their education was sufficient (Macaninch et al., 2020). In Malaysia, data on this issue remain limited.

Similarly, nursing students and practicing nurses have also shown inadequate nutrition knowledge and undervalued nutrition-related tasks. For instance, a systematic review found unsatisfactory self-care nutrition knowledge among nursing students (Mancin et al., 2023), and nurses in public hospitals perceived nutritional care—such as feeding and assessments—as unimportant (Boaz et al., 2013). Although many nurses had taken a nutrition course, only about two-thirds felt the content was adequate (Stanek et al., 1991), indicating the need to enhance both the quantity and quality of nutrition education in nursing training.

Previous studies have highlighted a growing call for improved nutritional knowledge among practicing healthcare professionals. To further explore this issue, the present study was designed to determine the perceptions of medical and nursing students regarding the incorporation of nutrition components into standard care practice. Indirectly, it aims to assess the needs and desires of medical and nursing students for nutrition knowledge during their undergraduate studies. The findings can serve as an assessment and reference for medical educational institutions in deciding to incorporate more nutrition into the medical curriculum. This, in turn, could better prepare doctors and nurses to provide consultations regarding lifestyle modifications to patients with non-communicable diseases (NCDs).

2. METHODOLOGY

This cross-sectional study was conducted among medical and nursing students at the Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS), located in Kota Samarahan, Sarawak. A cross-sectional design, chosen for its efficiency, cost-effectiveness, and short duration, was used to collect data on multiple variables at a single point in time. Participants were recruited using snowball sampling, where initial respondents were encouraged to refer other eligible students. The faculty offers two programs: the Doctor of Medicine (5-year) and the Bachelor of Nursing (4-year), and

all students from both programs, regardless of year, were invited to participate. The minimum required sample size was calculated using the Raosoft online calculator, based on a population of 987 students, a 5% margin of error, 95% confidence level, and a 50% response distribution, resulting in a sample size of 277 (Raosoft Inc., 2004).

2.1.Procedures

Data collection was conducted from May 1, 2022, to May 30, 2022. The information sheet, consent form, and self-administered questionnaire were transformed into a Google Form. Both Malay and English versions were prepared for the convenience of respondents to better understand the contents. The Google Form link was shared with class representatives of medical students (from year 1 to year 5) and nursing students (from year 1 to year 4). The link was distributed among their classmates through the social media platform WhatsApp. Respondents were required to read the information sheet and press the "agree" button to indicate their willingness to participate in this study. Subsequently, respondents were directed to the questionnaire section to answer the questions. Finally, at the end of the form, respondents needed to click the "submit" button to record their submission.

2.2.Instruments

The questionnaire used in this study was adapted from Schoendorfer et al. (2017). It comprised three sections: Part A focused on demographic information, Part B on nutrition in routine care, and Part C on clinical behavior.

Part A consisted of 11 items, gathering sociodemographic and behavioral characteristics of respondents. Information included age, gender, ethnicity, program, year of study, tobacco use, physical activity level, dietary supplement consumption, participation in formal nutrition education, perception of nutrition knowledge, experience with nutrition-based treatment, and sources of nutritional information.

Part B included 8 items to assess respondents' perceptions regarding the importance of incorporating nutrition components into routine care. Responses were provided on a 5-point Likert scale: strongly disagree (1), disagree (2), uncertain (3), agree (4), and strongly agree (5). Reversed scoring was applied to Items 1, 4, 5, and 8. A summative score was calculated by summing the scores, where a higher score indicated a more positive perception of nutrition in routine care.

Part C contained 20 items and aimed to assess respondents' perceptions regarding the importance of various clinical behaviors related to nutritional counseling and assessment. Response options were "yes" or "no," with one score given for a "yes" response and zero for a "no" response. A summative score was calculated by summing the scores for all items, where a higher score indicated greater acceptance of the listed nutrition-related clinical behaviors.

2.3.Pre-test

The questionnaire on the Google Form underwent a pretest involving 10 medical students selected purposively in April 2022. Those medical students involved in the pretest were subsequently excluded from the actual data collection. The primary aim of the pretest was to identify and rectify any ambiguous or offensive statements, as well as any spelling mistakes within the questionnaire. Respondents in the pretest identified several mistakes, particularly typing errors, which were subsequently addressed through modifications to ensure accuracy and clarity in the final questionnaire.

2.4.Statistical Analysis

Data cleaning and analysis were conducted using IBM SPSS Statistics version 22 (IBM Corp., Armonk, NY, USA). Initially, the gathered data were downloaded from Google Form in an Excel file and then transferred to SPSS. To assess the presence of skewed data distribution, normality tests such as histograms and box plots were applied. Descriptive analysis was performed by presenting numeric data as median and interquartile range, while categorical data were presented as frequency (n) and percentage (%). For inferential analysis, the Mann-Whitney U-test was employed to determine

differences in perception between medical and nursing students, as well as between male and female students, given the skewed distribution of the data. The significance level was set at 0.05.

3. RESULTS AND DISCUSSION

3.1.Results

Table 1 summarizes the sociodemographic characteristics of 352 participants, comprising 248 medical and 104 nursing students. Most respondents were 20 years old (42.3%) and female (77.8%). Ethnically, the majority were Bumiputera Sabah and Sarawak (38.4%), followed by Malay (30.4%), Chinese (24.1%), and Indian (7.1%). Over half were Year-1 students (51.1%).

In terms of health behavior, nearly all students were non-smokers (98.9%), and about 40% engaged in physical activity at least once per week. Around 28.4% reported taking dietary supplements. The most common sources of nutrition information were the internet (91.5%), lectures (59.7%), and textbooks (43.8%). However, only 22.7% had formal nutrition education, and among them, over half (55.1%) felt limited in their ability to explain nutrition to patients.

Regarding nutrition in routine care (Table 2, Part B), most students disagreed that preventive care is boring (85.8%) and strongly agreed on the importance of incorporating nutritional counseling and assessment into clinical practice. Statements supporting the role of healthcare professionals in patient nutrition received high agreement, though students expressed uncertainty about time constraints and their individual impact on patient outcomes.

In Part C (Table 2) on clinical behavior, over 90% of students agreed with most statements, including assessing supplement intake, encouraging diet-related questions, and referring diabetic patients for dietary counseling. Slightly lower agreement (88.1%) was observed for requesting diet histories or assessments from patients, indicating slightly less confidence in more detailed nutritional practices.

Furthermore, no significant difference was observed in the mean score for nutrition in routine care based on gender ($Z = -0.445$; $p = 0.656$) and the respondents' program of study ($Z = -1.547$; $p = 0.122$). Additionally, no significant difference was found in the mean score for clinical behaviors based on gender ($Z = -1.458$, $p = 0.145$) and the respondents' program of study ($Z = -1.211$; $p = 0.226$).

Table 1. Sociodemographic characteristics of respondents

Variable	Medical Student (N = 248)	Nursing Student (N = 104)	Total (N = 352)
	n (%)	n (%)	n (%)
Age			
19	10 (4.0)	2 (1.9)	12 (3.4)
20	119 (48.0)	30 (28.8)	149 (42.3)
21	52 (21.0)	35 (33.7)	87 (24.7)
22	40 (16.1)	13 (12.5)	53 (15.1)
23	10 (4.0)	21 (20.2)	31 (8.8)
24	12 (4.8)	2 (1.9)	14 (4.0)
25	3 (1.2)	1 (1.0)	4 (1.1)
Median (Interquartile range)	20.0 (2.0)	21.0 (2.0)	21.0 (2.0)
Gender			
Male	64 (25.8)	14 (13.5)	78 (22.2)
Female	184 (74.2)	90 (86.5)	274 (77.8)
Ethnicity			
Malay	78 (31.5)	29 (27.9)	107 (30.4)
Chinese	74 (29.8)	11 (10.6)	85 (24.1)

Indian	25 (10.1)	-	25 (7.1)
Bumiputera Sabah and Sarawak	71 (28.6)	64 (61.5)	135 (38.4)
Year of Study			
1st year	136 (52.7)	44 (42.3)	180 (51.1)
2nd year	54 (21.8)	24 (23.1)	78 (22.2)
3rd year	41 (16.5)	18 (17.3)	59 (16.8)
4th year	13 (5.2)	18 (17.3)	31 (8.8)
5th year	4 (1.6)	-	4 (1.1)
Tobacco Use			
Yes	2 (0.8)	2 (1.9)	4 (1.1)
No	246 (99.2)	102 (98.1)	348 (98.9)
Day(s) of Physical Activity / Week			
1	104 (41.9)	38 (36.5)	142 (40.3)
2	53 (21.4)	26 (25.0)	79 (22.4)
3	56 (22.6)	25 (24.0)	81 (23.0)
4	18 (7.3)	11 (10.6)	29 (8.2)
5	11 (4.4)	3 (2.9)	14 (4.0)
6	4 (1.6)	-	4 (1.1)
7	2 (0.8)	1 (1.0)	3 (0.9)
Dietary Supplement Consumption			
Yes	83 (33.5)	17 (16.3)	100 (28.4)
No	165 (66.5)	87 (83.7)	252 (71.6)
Formal Nutritional Education			
Yes	48 (19.4)	32 (20.8)	80 (22.7)
No	200 (80.6)	72 (69.2)	272 (77.3)
Perceived Knowledge of Nutrition			
I know enough to treat a patient using nutrition-based treatments.	7 (2.8)	7 (6.7)	14 (4.0)
I know enough to explain the principles of nutrition to a patient.	65 (26.6)	38 (36.5)	104 (29.5)
I know something about the area of Nutrition but not enough to explain it to a patient.	139 (56.0)	55 (52.9)	194 (55.1)
I know very little about nutrition-based treatments.	36 (14.5)	4 (3.8)	40 (11.4)
Experience in Nutrition-Based Treatment			
I have had previous training in nutrition-based treatments.	5 (2.0)	3 (2.9)	8 (2.3)
I personally utilize nutrition-based treatments to assist with my own health.	45 (18.1)	24 (23.1)	69 (19.6)
I have personally in the past utilised nutrition based treatments to assist with my own health.	51 (20.6)	29 (27.9)	80 (22.7)
I have observed and talked with people using nutrition-based treatments with patients.	47 (19.0)	21 (20.2)	68 (19.3)

I have had no experience with nutrition-based treatments.	100 (40.3)	27 (26.0)	127 (36.1)
Source of Nutrition Information			
Consumer magazines	41 (16.5)	21 (20.2)	62 (17.6)
Professional magazines	45 (18.1)	19 (18.3)	64 (18.2)
Internet	220 (88.7)	102 (98.1)	322 (91.5)
Words of mouth	96 (38.7)	54 (51.9)	150 (42.6)
Peer-reviewed journals	50 (20.2)	17 (16.3)	67 (19.0)
Previous lectures	136 (54.8)	74 (71.2)	210 (59.7)
Text books	105 (42.3)	49 (47.1)	154 (43.8)
Do not consult any sources at all	3 (1.2)	1 (1.0)	4 (1.1)
None of these, but i consult others not listed here.	20 (8.1)	-	20 (5.7)

Table 2. Distribution of respondents regarding their perception for nutrition in routine care and clinical behaviours

Nutrition in Routine Care	Medical Student (N = 248)			Nursing Student (N = 104)			Total (N = 352)		
	Disagree n (%)	Uncertai n (%)	Agree n (%)	Disagree n (%)	Uncertain n (%)	Agree n (%)	Disagree n (%)	Uncertain n (%)	Agree n (%)
1. Preventative health care is boring.	211 (85.1)	27 (10.9)	10 (4.0)	91 (87.5)	11 (10.6)	2 (1.9)	302 (85.8)	38 (10.8)	12 (3.4)
2. Nutritional counseling should be part of routine care by all physicians and nurses.	5 (2.0)	17 (6.9)	226 (91.1)	4 (3.8)	5 (4.8)	95 (91.3)	9 (2.6)	22 (6.3)	321 (91.2)
3. Nutritional assessment and counseling should be included in my routine appointment.	5 (2.0)	34 (13.7)	209 (84.3)	4 (3.8)	20 (19.2)	80 (76.9)	9 (2.6)	54 (15.3)	289 (82.1)
4. Nutritional counseling is not an effective use of my professional time.	188 (75.8)	48 (19.4)	12 (4.8)	76 (73.1)	23 (22.1)	5 (4.8)	264 (75.0)	71 (20.2)	17 (4.8)
5. Individual physicians or nurses have little impact on a patient's ability to lose weight.	120 (48.4)	76 (30.6)	52 (21.0)	52 (50.0)	40 (38.5)	12 (11.5)	172 (48.9)	116 (33.0)	64 (18.2)
6. I have an obligation to improve the health of patients including discussing nutrition with them.	4 (1.6)	17 (6.9)	227 (91.5)	3 (2.9)	9 (8.7)	92 (88.5)	7 (2.0)	26 (7.4)	319 (90.6)
7. All physicians and nurses should counsel high-risk patients about dietary change.	2 (0.8)	20 (8.1)	226 (91.1)	2 (1.9)	5 (4.8)	97 (93.3)	4 (1.1)	25 (7.1)	323 (91.8)
8. It is not worth the time to counsel patients with poor dietary patterns about nutrition.	206 (83.1)	28 (11.3)	14 (5.6)	87 (83.7)	10 (9.6)	7 (6.7)	293 (83.2)	38 (10.8)	21 (6.0)

Median (Interquartile range)	33.0 (4.3)	32.0 (5.0)	33.0 (4.0)[a,b]

Clinical Behavior	Yes n (%)		
	Medical Student (N = 248)	Nursing Student (N = 104)	Total (N = 352)
1. It is important that I perform at least some level of nutritional assessment with every patient.	243 (98.0)	102 (98.1)	345 (98.0)
2. It is important that I address the importance of diet whenever I care for a patient.	242 (97.6)	104 (100.0)	346 (98.3)
3. It is important that I follow the 5th Edition of Clinical Practice Guidelines Management of Dyslipidemia 2017 guidelines for prevention and treatment of high blood cholesterol when caring for a patient.	244 (98.4)	102 (98.1)	346 (98.3)
4. It is important that I identify dietary risk factors in paediatric patients by assessing diet and energy balance.	245 (98.8)	103 (99.0)	348 (98.9)
5. It is important that I assess each patient's weight status in accordance with the Malaysia Clinical Practice Guidelines on Management of Obesity.	247 (99.6)	100 (96.2)	347 (98.6)
6. It is important that I assess each patient's intake of vitamin, mineral and dietary supplements.	227 (91.5)	100 (96.2)	327 (92.9)
7. It is important that I counsel patients regarding their use of supplements and identify when they are contraindicated.	248 (100)	101 (97.1)	349 (99.1)
8. It is important that I refer patients with diet-related problems to registered dietitians or other qualified nutrition staff.	242 (97.6)	104 (100)	346 (98.3)
9. It is important that I whether possible recommend dietary changes for patients before initiating drug therapy.	237 (95.6)	99 (95.2)	336 (95.5)
10. It is important that I assess each patient's fat, fibre, fruit and vegetable intake as a preventive strategies.	235 (94.8)	100 (96.2)	335 (95.2)
11. It is important that I request that patients bring a food record or perform another diet assessment measure when they come in for routine visits.	212 (85.5)	98 (94.2)	310 (88.1)
12. It is important that I encourage patients to ask diet-related questions and refer them for additional assistance when warranted.	247 (99.6)	103 (99.0)	350 (99.4)
13. It is important that I evaluate patient's alcohol intake as part of their overall nutritional status.	246 (99.2)	103 (99.0)	349 (99.1)
14. It is important that I assess each patient's stage of change before initiating dietary intervention.	245 (98.8)	100 (96.2)	345 (98.0)

15. It is important that I assess dietary sodium, potassium and calcium intake especially among patients at risk for hypertension, osteoporosis or stroke.	241 (97.2)	103 (99.0)	344 (97.7)
16. It is important that I refer diabetic patients for detailed dietary counseling.	246 (99.2)	103 (100.0)	350 (99.4)
17. It is important that I advocate diet and activity balance to promote weight control in patients.	247 (99.6)	101 (97.1)	348 (98.9)
18. It is important that I assess my patient's ability to read a food label.	221 (89.1)	97 (93.3)	318 (90.3)
19. It is important that I advocate a low-fat diet for weight control in patients.	240 (96.8)	101 (97.1)	341 (96.9)
20. It is important that I assist paediatric patients to establish healthy eating habits early in life to prevent risk for chronic diseases.	245 (98.8)	103 (99.0)	348 (98.9)
Median (Interquartile range)	20.0 (0)	20.0 (0)	20.0 (0)[c,d]

[a] No significant difference was found in the mean score of nutrition in routine care between medical and nursing students (U = 11554.0; Z = -1.547; p = 0.122)

[b] No significant difference was found in the mean score of nutrition in routine care between male and female students (U = 10334.5; Z = -0.445; p = 0.656)

[c] No significant difference was found in the mean score of clinical behaviours between medical and nursing students (U = 12129.5; Z = -1.211; p = 0.226)

[d] No significant difference was found in the mean score of nutrition in routine care between male and female students (U = 9846.0, Z = -1.458, p = 0.145)

3.2. Discussion

The present study contributes to an improved understanding of health behaviors among medical and nursing students and their perceptions of incorporating nutrition components into standard care practices. Overall, a mixed finding was obtained concerning health behaviors among the respondents. The prevalence of smokers was low in the present study compared to several foreign countries among medical students (ranging from 13.9% to 49.5%) and nursing students (ranging from 15.5% to 32.9%) (Chkhaidze et al., 2013; Fejza et al., 2018; Fernández-García et al., 2020; Ilić et al., 2022; Pingak & Miller, 2019; Provenzano et al., 2019; Rodríguez-Muñoz et al., 2020). The lower engagement in smoking among healthcare students may be attributed to their higher health knowledge and awareness guiding them toward decisions to quit smoking.

Meanwhile, a high proportion of the respondents in the current study reported being inactive. These findings are consistent with other studies where 49.0% of medical students and 53.2% of nursing students were found to be inactive (Khorshtd et al., 2020; Naim et al., 2016). However, contradictory findings were reported in some studies, indicating that medical and nursing students showed a certain level of activeness in their physical activities (Al-Tannir et al., 2017; Rao et al., 2012; Wattanapisit et al., 2016). Healthy behaviors among doctors are of concern, as patients tend to rate doctors engaging in healthy activities as more believable and motivating (Frank & Elon, 2000). Physicians practicing healthy behaviors are also more likely to counsel patients on the same healthy behaviors they are practicing (Frank et al., 2010).

The consumption of dietary supplements is common among university students, with one-third of the respondents in this study reporting the use of dietary supplements. These findings align with a study from the University of Rijeka, Croatia, where 33.1% and 28.8% of students from the medical sciences and non-medical sciences faculties took supplements (Žeželj et al., 2018). Additionally, a study from the Faculty of Health Sciences, Ankara Yıldırım Beyazıt University, in Turkey reported that 28.5% of students consumed dietary supplements (Erzurum Alim et al., 2021). While this research does not explore these topics, it is expected that medical and nursing students possess sufficient knowledge regarding dietary supplements before making decisions to consume supplements or recommending them to patients in the future.

Overall, the majority of respondents in this study perceived themselves to have low knowledge in nutrition, based on their participation in formal nutrition education, as well as perceived knowledge and experience regarding nutrition-based treatment. However, the high proportion of low perceived knowledge and experience in nutrition-based treatment was mainly due to the recruitment of preclinical medical students, specifically first and second-year students. The curriculum during the preclinical phase focuses more on comprehensive medical knowledge in anatomy, biochemistry, genetics, microbiology, parasitology, virology, hematology, and immunology. Referring to the literature, several studies have shown that medical students generally possess low nutrition knowledge, as reported by Dolatkhah et al. (2019) among medical students at Tabriz University of Medical Sciences and by Mogre et al. (2017) among medical students at the University for Development Studies, School of Medicine and Health Sciences, Ghana. As expected, most of them seek nutritional knowledge through the internet rather than previous lectures, consistent with previous findings involving young adults and medical students (Quaidoo et al., 2018; Žeželj et al., 2018).

Nutrition-related risk factors are recognized as some of the most prominent determinants linked to non-communicable diseases (Bruins et al., 2019; Budreviciute et al., 2020). The majority of respondents in this study had a positive perception towards incorporating nutrition components into their future routine care and clinical behaviors. Respondents agreed that utilizing preventive medicine for non-communicable diseases is one approach to manage and control the rising trend of such diseases. Prevention management strategies aim to eliminate lifestyle risk factors associated with non-communicable diseases, including unhealthy diet, sedentary behaviors, smoking, and alcohol consumption (Budreviciute et al., 2020).

Under prevention management strategies, nutritional counseling is widely used by dietitians, nurses, and other healthcare workers to empower patients in making decisions to shift towards healthy lifestyles. This is achieved by disseminating evidence-based nutritional knowledge to patients and helping them understand the information (Maharjan & Chaudhary, 2021; Vasiloglou et al., 2019). Nutritional counseling has been proven to provide positive outcomes in the nutritional behaviors and

nutritional status of certain target groups (Derose et al., 2015; Mehrabani et al., 2016; Siopis et al., 2020). Nutritional assessment is a method commonly used during nutrition screening to detect the presence of risk factors for nutrition-related problems, identify specific nutritional problems, and evaluate the severity of these problems (Reber et al., 2019). The lower agreement with the statement on clinical behaviors to recommend patients to prepare a diet history and perform other dietary assessment methods might be due to their familiarity with the complexity of these methods, involving high respondent burden, possible time restrictions, as well as low sensitivity and specificity of the methods (Vasiloglou et al., 2019). In this case, it is important to acknowledge that proper training among healthcare workers is essential for an effective nutritional counseling session and performing dietary assessments (Blunt & Kafatos, 2019).

Not only should the perceptions of physicians be considered, but also the perceptions of nurses regarding the incorporation of nutrition into routine care should not be neglected. In this study, insignificant findings in both scales showed consensus from both medical and nursing students towards the necessity of incorporating nutrition into routine care. As part of the primary healthcare providers, similar to physicians, nurses are required to address nutrition-related needs of patients, dealing with feeding difficulties, dehydration, and malnutrition in hospitals, as well as providing nutritional counseling to individuals with non-communicable diseases at the community level (Laing & Crowley, 2021). The importance of nutrition education for nursing students has been emphasized in several studies (Chepulis & Mearns, 2015; Chonaill et al., 2022). On the other hand, male and female medical and nursing students share a similar perception in agreeing to incorporate nutrition into routine care. These findings align with a previous study at the Gulf Medical University in Ajman, United Arab Emirates, where physicians and specialists, regardless of gender, recognized the importance of nutrition education and knowledge (Gomathi, 2014).

The present study took a step further than the previous study by involving other health science courses, specifically nursing, due to the rationale that nurses also provide nutritional counseling to patients. At the same time, several limitations were identified. Purposively selected medical and nursing students in the present study had limited representativeness. Moreover, a low response rate further affected the representativeness. In this case, the generalization of the findings within the Malaysian setting was restricted. In the future, it is recommended that a random sampling method be used to select representative samples from all universities in Malaysia that offer Medical and Nursing programs. This study presented simple descriptive analysis and limited inferential analysis. It is suggested that further studies could explore more potential factors linked to differences in perceptions among students. Nonetheless, a self-administered data collection method was applied, and the self-reported method is prone to social desirability bias.

4. CONCLUSION

From the findings, medical and nursing students in this study demonstrated a high awareness of the dangers of smoking but were less active in terms of physical activity. Most of them had a low perceived knowledge and experience regarding nutrition-based treatment. Importantly, almost all the medical and nursing students had a positive perception of incorporating nutrition into standard care practice. These positive feedbacks indicate a demand for nutritional knowledge, especially related to nutritional counseling and nutritional assessment, from medical and nursing students. However, many questions remain unanswered. For instance, the readiness of current medical education in preparing future medical doctors and nurses to provide nutritional counseling and perform nutritional assessments on patients, as well as the determination of prioritized nutritional skills that need to be mastered by healthcare students before starting their services at hospitals or clinics, are worth exploring further.

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CONFLICT OF INTEREST

We declare no conflict regarding the publication of the study

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