ORIGINAL ARTICLE

Is Dietary Knowledge a need of final-year medical undergraduates for better clinicians in future?

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ABSTRACT

Background: A healthy diet is essential for good health and nutrition. Health professionals are considered role models in promoting healthy diet patterns. However, in a few studies, it was evident that most physicians have inadequate training in dietary knowledge to guide patients, although final-year students have better knowledge than first-year students, which shows nutrition care improved with progression through their medical training.
Aim: To assess the dietary knowledge of final-year medical students and to assess their attitudes toward the importance of dietary counseling as practicing physicians in the future.
Methodology: A cross-sectional study was conducted at Shalamar Medical and Dental College, Lahore, on final-year MBBS students of Shalamar Medical and Dental College. After the approval of SMDC-IRB (IRB-197), data was collected in the form of study proforma by the final-year students of SMDC using their WhatsApp contacts. Those who responded were considered participants in the study, while those who did not respond after the second reminder were considered excluded from the study. Statistical analysis was done using the SPSS package version 20.0. To access differences in means of quantitative variables, independent samples t-tests and one-way ANOVA tests were applied. The correlation was analyzed by the Pearson correlation coefficient. The statistical methods were verified, assuming a significance level of $p < 0.05$ and a highly significant level of $p<0.001$. The total score for knowledge, attitude, and practice was categorized as good/positive or poor/negative based on a 75% cut-off point out of the total expected score for each.
Results: The 134 students participated in the study. Male students were found to be more overweight or obese compared to female students ($p<0.025$). M The majority of students rated their self-reported health as good. To explore the knowledge, responses to questions related to cardiovascular problems, diabetes, respiratory diseases, gastrointestinal diseases, and anemia were recorded. Almost three-fourths of the students were aware of the major health issues. According to 773% of students, iron present in meat is a better source of iron compared to vegetables. A similar response was found for gluten-rich diets. More than 90% of the students considered dietary knowledge an essential component for better clinical care of the patient.
Conclusion: Final-year MBBS students, though adequately trained, consider that having additional dietary knowledge can help them in counseling patients about diet.
Keywords: Nutrition, diet intake, food knowledge, medical education, medical students

INTRODUCTION

A healthy diet is essential for good health and nutrition. It includes a daily intake of balanced macronutrients along with eating staples, legumes, fruits, vegetables, and foods from animal sources. Similarly, it also means avoiding those foods that are rich in salt, sugar, saturated fat, and industrially produced trans fat. (WHO fact sheet)

Nutrition is often neglected in health care, despite the definitive connection between diet and health. A significant obstacle to improving world health is the prevalence of non-communicable diseases (NCDs)[2]. Poor nutrition, inactivity, tobacco use, and excessive alcohol consumption are among the lifestyle variables that lead to the development of non-communicable illnesses.

According to the viewpoint of 2013 global disability-adjusted life years (DALYs), an unhealthy diet results in 11.3 million deaths and 241.4 million disability-adjusted life years. [4] Dietary habits have an impact on lifestyle choices that can be modified for the treatment and prevention of non-communicable illnesses. Healthcare personnel regularly encourage healthy eating practices to avoid non-communicable diseases and are typically seen as role models in the community. Healthcare personnel regularly encourage healthy eating practices to avoid non-communicable diseases and are typically seen as role models in the community[6].

One of the pillars of cardiovascular guidelines for risk reduction and therapy is nutrition. Physicians are more frequently approached for nutritional guidance and information compared to dietitians and nutritionists. These ideas are unquestionably thought to be more cost-effective[9]. Despite the fact that patients view doctors as trustworthy providers for dietary advice, their expectations are not always satisfied. This problem is further

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exacerbated by other elements, including poor patient compliance and limited clinic time. However, the majority of medical professionals have recognized a lack of counseling skills training and insufficient nutritional expertise as the two biggest obstacles to giving patients who need it food advice.

The research conducted by Ghazi Dhardarik et al. showed that physicians' knowledge was inadequate. Also, the research conducted by Hargrove et al. showed that the average nutrition knowledge score of students was 70%, and senior year students did better than first-year students[15]. Student's confidence in nutrition care improved with progression through their medical training but was limited to a few select diseases, for example cardiovascular, diabetes management, and ceiliac disease [16]. However, it was mentioned in the review article that most medical students reported inadequate nutrition knowledge, whether assessed objectively or subjectively[17]. In light of that, the current study was designed to assess the dietary knowledge of final-year medical students related to common health problems and to assess their attitudes toward the importance of dietary counseling as practicing physicians in the future.

This study is the first of its kind since it was done by final-year MBBS students of a medical college who are just on the verge of becoming house officers. Anemia being a common health problem in Pakistan, dietary knowledge relating to iron was inquired about from the study participants, and most participants were able to answer the questions. This study highlights the importance of iron with respect to good clinical practice among the students who are about to enter health care settings.

METHODS

A cross-sectional study was conducted at Shalamar Medical and Dental College, Lahore, on final-year MBBS students of Shalamar Medical and Dental College. After the approval of SMDC-IRB (IRB-197), data was collected in the form of study proforma by the final-

year students of SMDC using their WhatsApp contacts. Those who responded were considered participants in the study, while those who did not respond after the second reminder were considered excluded from the study. Statistical analysis was done using the SPSS version 20.0. To access differences in means of quantitative variables, independent samples t-tests and one-way ANOVA tests were applied. The correlation was analyzed by the Pearson correlation coefficient. The statistical methods were verified, assuming a significance level of p<0.05 and a highly significant level of p<0.001. The total score for knowledge, attitude, and practice was categorized as good/positive or poor/negative based on a 75% cut-off point out of the total expected score for each.

A purposeful sampling technique was used to recruit participants. The sample size for this survey study was calculated using Open Epi, version 3, an open-source calculator. Based on 150 final-year students at 50% frequency of outcome factor with a 95% confidence limit and a 1.3 design effect, the sample size is 141. The study consisted of three parts. The first part included gender, BMI, and self-reported health conditions. The second part assessed the knowledge of specific diets with respect to different diseases, whereas the third part highlighted the importance of dietary counseling.

The modified self-administered questionnaire is based on a validated and published study (Ghazi A.F. Daradkeh et al., 13). After the approval of SMDC-IRB (IRB-197), data was collected in the form of study proforma by the final-year students of SMDC using Google Forms. Those who responded were considered participants, while those who did not respond after the second reminder were considered excluded from the study.

Statistical analysis was done using the SPSS package version 20.0. The mean SD was used for quantitative variables, while numbers and percentages were used for qualitative variables. To access differences in means of quantitative variables, independent samples t-tests and one-way ANOVA tests were applied. The correlation was analyzed by the Pearson correlation coefficient. The statistical methods were verified, assuming a significance level of p<0.05 and a highly significant level of p<0.001. The total score for knowledge, attitude, and practice was categorized as good/positive or poor/negative based on a 75% cut-off point out of the total expected score for each.

RESULTS

A total of 141 students were approached. Only 134 study proformas with complete information were included in the analysis, making the response rate 134/141*100=95.035%. There were 51 male students and 83 female students. Based on BMI, 56.70% of study participants had a normal weight, 16.40% were overweight, and 13% were underweight. The majority of students ranked their personal health as good, while 31(23.8%) rated their health as fair (Table 1).

A significant association was seen between BMI categories and gender (male or female), revealing that male students were more overweight or obese compared to female students (p value =0.025) (Table 2).

Table 1: Demographic characteristics of study participants

Variables		n%
Gender	Male	51(38.05%)
	Female	83(61.94%)
BMI	Underweight-normal	94(70.1%)
	Overweight -obese	40(29.9%)
In general, how do you rate your health	Excellent	17(12.70%)
	Good	85(63.40%)
	Fair	31(23.10%)
	Poor	1(0.70%)

Table 2: Association of gender with the BMI categories (n=134)

Gender	Underweight-Normal	Overweight-Obese	P value
Female	64(77.1%)	19(22.9%)	0.025
Male	30(58.8%)	21(41.2%)	

For diet in different health conditions, a majority of respondents considered dietary soluble fiber as the most helpful source for lowering blood cholesterol. Animal fat was reported by 78% of study participants as a more likely food to raise blood cholesterol. For the increase in HDL cholesterol, the response was variable; only 22% were of the view that it was because of alcohol, while 48% and 29% were of the view that it was riboflavin and animal protein, respectively. Eating less trans fat prevents heart disease, as reported by 70% of study participants, and omega-3 fatty acids were rated most as preventing thrombosis in coronary heart disease. To prevent diabetes, eating less refined food was rated by three-quarters of the study participants as compared to drinking fruit juice by 14% and processed meat by 15% of the study participants, respectively. White bread was reported by 60% of respondents as having a high glycemic index as compared to whole cereals by 31%. Antioxidants rich in vitamin A, E, and D and flavonoids useful for patients with respiratory diseases were reported by 64% of study participants (Table 3).

The gluten-rich diet was known to 79% of respondents. Protein from white meat for chronic liver disease patients was reported by 55% of study participants. Ispaghol, plums, and figs, a source of fiber for preventing constipation, were reported by most of the study participants (Table 3).

Iron is present in meat; a better source of iron as compared to vegetables was reported by 73% of study participants, whereas 65% reported vegetables as a source of iron. Avoiding coffee and tea to help absorb iron from meals was reported by 64.9% of the study participants. Fruits and vegetables were considered to have a preventive effect on various types of cancer, as reported by 65% of study participants, compared to milk or baked meat by 8%.

In terms of the attitude of study participants with respect to dietary counseling, 96% of respondents felt that dietary knowledge is essential for health care professionals. Only 14.9% of participants agreed that physicians should be adequately trained to discuss dietary patterns for the clinical care of patients, while 85.1% disagreed with this opinion. More than 77% of study participants felt that additional training in dietary knowledge would result in better clinical care for patients. However, more than 70% of participants felt dietary knowledge was the job of a physician (Table 4).

Table 3: Knowledge of Study Participants for Diet Intake in Different Health Conditions.

S.No	Question In your opinion what is most appropriate in different health conditions?	Options	No. of respondents for options	
			(n)	(%)
A	**Hypertension, Heart disease, Obesity**			
1	Which type of dietary fiber is most helpful in lowering the blood cholesterol level?	Soluble fiber* Insoluble fiber Don't know	68 51 15	50.74 38.05 11.91
2.	Which food is more likely to raise blood cholesterol?	Animal fat* Eggs Vegetable oils	105 16 13	78.30 11.94 9.70
3.	Which substances raises the blood HDL-Cholesterol level?	Alcohol* Riboflavin Animal protein	30 65 39	22.38 48.50 29.10
4.	Which of these is prevents heart disease?	Eating less trans-fat* Eating less oily fish Taking nutritional	95 20 19	70.90 14.92 14.17

		supplements		
5.	Which nutrient helps to prevent thrombosis in coronary heart disease?	Omega 3 fatty acids* Mono-unsaturated fat Vitamin C	91 17 26	67.90 12.68 19.40
B	**Diabetes**			
1.	What is recommended to prevent diabetes?	Eating less refined food* Drinking more fruit juice Eating more processed meat	100 19 15	74.62 14.17 11.19
2.	Which food is classified in raising a high Glycemic index?	White bread * Whole cereals Fruit and vegetables	81 42 11	60.44 31.34 8.20
C	**Respiratory disease**			
1.	Antioxidants rich in vitamin A, E, D, flavonoids and carotenoids help patients with respiratory diseases.	Yes* Don't know No	86 31 16	64.17 23.13 11.94
D	**Gastrointestinal disease**			
1.	Gastroesophageal reflux disease (GERD) is worsened by chocolate peppermint, fatty foods and coffee.	Yes* Don't know No	76 22 36	56.71 16.41 26.86
2.	Wheat barley and rye are Gluten rich diets.	Yes* Don't know No	107 15 12	79.85 11.19 8.95
3.	People with Irritable bowel syndrome and inflammatory bowel disease may feel better when they eliminate dairy products, fatty foods, spicy foods, and caffeine.	Yes* Don't know No	101 18 15	75.37 13.43 11.19
4.	Patients with ascites are malnourished and thus require protein intake and sodium restriction.	Yes* Don't know No	95 28 15	70.89 20.88 11.19
5.	Protein source for Chronic liver disease should be from egg, chicken/fish and not from red meat.	Yes* Don't know No	75 32 27	55.97 23.87 20.14
6.	Ispaghol, Figs (injeer) and Plums (aloo Bukhara) are a good source of fibers for preventing constipation.	Yes* Don't know No	110 17 7	82.08 12.68 5.22
E	**Anemia**			
1.	Haem iron present in meat, poultry and fish are better sources of iron as compare to the plant green leafy vegetables.	Yes* Don't know No	98 17 19	73.13
2.	Iron is rich in legumes (beans lentils chickpeas) egg, nuts and seeds.	Yes* Don't know no	88 22 28	65.67
3.	Taking citrus fruits, avoiding coffee and tea helps to absorb iron from meals.	Yes* Don't know No	87 31 16	64.92 23.12 11.93
F	**Urinary tract infections**			
1.	Cranberry and high fiber diet are good in urinary tract infection.	Yes* Don't know No	96 24 14	71.64 17.90 10.44
G	**Cancer**			
1.	Which type of food have preventive effect on various types of cancer?	Fruits and vegetables* Milk Baked meat	117 11 6	87.3 8.20 4.47

*= most precise answer to the question among choices.

Table 4: Attitude and practice of study participants regarding dietary counseling related to common health problems

Statement	Response frequency (%)		
	Agree	**Neutral**	**Disagree**
Dietary knowledge essential for health professionals.	129(96.26)	4 (2.98)	1 (0.74)
Physician should have a good dietary knowledge for different medical conditions.	113(84.32)	16(11.94)	5(3.73)
Physician should be adequately trained to discuss dietary patterns for clinical care of patients.	20 (14.9)	75 (56.0)	39 (29.1)
Additional training in dietary knowledge results, in better clinical care of the patients.	104 (77.6)	25(18.7)	5(3.7)
Dietary knowledge is a job of a physician.	95(70.9)	34(25.4)	5(3.7)
Dietary knowledge is a job of a dietitian.	76(56.7)	53(39.6)	5(3.7)

DISCUSSION

The study has shown that there is a significant correlation between BMI and gender; this is consistent with the study, which showed In comparison to women, more men (33.7%) were overweight, whereas more women (25.3%) were underweight. Males were more likely to think they were overweight than they were to think they were underweight. Approximately 30% of men picked an overweight body as their ideal model, compared to more than 50% of women who favored an underweight form. (Kuan PX et al.)[18]. Our study reported that the knowledge of dietary soluble fiber is similar to the findings by Daradkeh et al (2014), which state that

doctors have limited understanding of important nutritional topics such as the role of soluble fibers in reducing blood cholesterol and the meals with the lowest glycemic index. The results relating to eating less trans-fat and eating more omega-3 fatty acids were pretty much similar to those of Daradkeh et al (2014). This shows that this information is quite well inculcated in the final-year MBBS students. The response to the question about substances that raise HDL cholesterol was also similar to research (Daradkeh et al)[14], where the score was 40% for alcohol, which is considered a precise answer in the study. Since alcohol is religiously prohibited in Islamic-majority countries, such a response would have been

biased. And 74% of respondents agreed that eating less refined foods is preventive for diabetes, which is consistent with Moradi[22], which states that the use of ultra-purified foods is associated with a greater risk of diabetes. In this study, the majority of respondents were consistent with the fact that antioxidants help patients with respiratory diseases, which is consistent with Vézina FA[23], which states that increasing antioxidants could help with respiratory diseases.

The majority of the respondents felt that dietary knowledge is essential for health care professionals, which is consistent with the review article, which shows that many studies consistently show that medical students want to perceive education[17]. Medical students should have good dietary knowledge regarding different medical conditions, which is similar to findings in Perlstein R.16. 84% of respondents agreed that physicians should have good dietary knowledge for different medical conditions. The point that physicians should be adequately trained to discuss dietary patterns for the clinical care of patients is consistent with study[16]. Additional training in dietary knowledge results in better clinical care for the patients. This point is consistent with Hseiki RA et al[19], where primary care physicians still felt room for improvement in nutritional counseling. In general, medical students believe that it is their responsibility to counsel the patient regarding dietary modifications to manage their disease. This point is consistent with a study in which physicians believed so[19,23]. In our study, 76% of the study participants were of the view that dietary knowledge is the job of a physician, which is similar to a study that highlighted that doctors don't feel it is necessary to refer each patient to a dietitian for specialist advice. The results of this survey cannot be generalized to the entire population of final-year MBBS students because they only included respondents from Shalamar Medical and Dental College and not from other colleges in Lahore. The replies were self-reported in this cross-sectional survey, which might be skewed. Data input via computers could have skewed the findings.

CONCLUSION

The current study concludes that the final-year MBBS students are adequately trained in dietary knowledge with respect to better dietary counseling of patients with different health conditions, and they also considered having additional dietary knowledge to help the patients.

Recommendation: This study is the first of its kind since it was done by final-year MBBS students of a medical college who are just on the verge of becoming house officers. Anemia being a common health problem in Pakistan, dietary knowledge relating to iron was inquired about from the study participants, and most participants were able to answer the questions.

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