

Weight Lifting, Weight Loss and What to Eat Addressing the Unmet Medical Curriculum of Health Maintenance

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ABSTRACT

Background: Nutrition is essential for health and wellbeing. However, less than 50% of general doctors give nutritional advice to patients. These studies aims to measure medical students' perceptions about the importance of nutrition, measure their confidence in giving nutritional advice to patients, and suggests proper teaching interventions.

Methods: Students enrolled in the 2016 entry program in RCSI, Dublin (N 1200) completed a confidential 19 item online survey. Surveys were completed by 365 students (30%). The survey assessed student's confidence in their ability to address diet with patients, diet habits, and perceptions about the importance of nutrition and nutrition's teaching.

Results: Most students (63%) are either "**confident**" or "**extremely confident**" in prescribing nutrition to patients. However, 25% reported eating more than 4 servings of fatty foods regularly. Up to 83% of students rated healthy eating as "**very important**" for patient's health and wellbeing.

Conclusion: The majority of students believe nutrition is hugely important for patients. Generally, they are confident in their ability to address diet with patients. However, a considerable number have negative health habits which must be addressed. We suggest integrating an innovative nutrition's course to increase students' confidence in relation to nutrition.

INTRODUCTION

Nutrients are essential for health and wellbeing. Nutritional imbalances (over or under-nutrition) are very important factors in development of diseases, and taking into consideration the nutritional status of the patient must be parallel to conventional medical interventions including drugs and surgery [1-7]. A poorly balanced diet is shown to be a dominant risk factor in morbidity and mortality of several conditions including diabetes, hypertension, heart disease, stroke and cancer [8]. A study showed that 20-40% of mortality in cancer patients is due to cachexia, which can be mitigated by an aggressive nutritional interventions [9,10]. Healthy lifestyle choices can prevent disease, and have a positive effect on treatment and patient outcome, thus doctors must be well educated on nutrition [11-13].

Fewer than 50% of the general practitioners in the United States provide guidance for their patients about lifestyle choices, such as diet or weight control, despite the prediction of the World Health Organization that two thirds of diseases in 2020 will result from poor lifestyle choices. This gap might be due to lack of structured teaching on lifestyle medicine including nutrition [1].

The teaching on nutrition and its relationship to health is underrepresented in a traditional medical school. A survey of 106 medical schools in the US showed that only 40% required a separate nutrition course. The average instruction time each student received during college was 23.9 contact hours. The recommended 25 contact hours by the National Academy of Science was achieved by only 40 institutions. The majority of instructors (88%) expressed the need for additional nutrition teaching [2].

A study aimed to review the nutrition's teaching hours delivered during the 6 year medical programme in the Royal College of Surgeons in Bahrain (RCSI-B) showed that the students were exposed to a total of 15 h, predominantly in the form of lectures

(13.5 h), and supplementary videos (1.5 h). The 15 h spent on educating students does not meet the minimum international recommendations of 25 h to 44 h [6].

The knowledge of medical students and doctors in relation to nutrition was examined by a questionnaire. Percentages of correct answers were 51% and 59% respectively. Over 95% of both groups described their teaching as “inadequate” and requiring additional training and education [3].

Many papers have been published on the importance of, and difficulties related to implementing improvements in nutrition education in medical schools. Some of the major challenges are the inflexibility of the curriculum due to time constraints and the disagreement on defining subjects that should be taught. Another problem is the debate on the best method to deliver the material to students [4].

A study by Vargas et al found that the integration of nutrition education within a cardiovascular module for second year medical students was associated with improved eating habits based on RYP modified questionnaire. Rate Your Plate is a food-frequency questionnaire that helps in understanding personal healthy food choices. Each quality food is given a rank, and a score is given at the end of the questionnaire that falls into 1 of 3 qualitative groups. Because the students had high baseline RYP score, the improvement was small. The change in the mean score was 1.78. Because personal experiences with healthy lifestyle will influence doctors’ and students attitudes about the importance of nutrition and exercise, they are more likely to recommend the same for their patients [5].

Health promotion and disease prevention are thought of as one of the key responsibilities of the medical profession. Our study aims to measure students’ perceptions about the importance of nutrition’s teaching within our medical school and their confidence in nutrition’s prescription.

MATERIALS AND METHODS

EBSCO host online information service was the preferred choice to carry out the literature review. The service allowed searching for journal articles in both MEDLINE and CINAHL databases. The total number of articles reviewed was 18. A comprehensive, multiple and advanced search algorithms were performed to find the target articles.

Terms used include, nutrition, diet, lifestyle, prevention, education, medical, school, college, curriculum, perceptions, attitude, knowledge. The full list of terms is provided below.

Nutrition	Diet	Medical students
Medical	Education	Curriculum
Attitudes	Knowledge	Lifestyle
Survey	Obesity	Interventions
Perceptions	Prevention	Eating habits
Teaching	Adequacy	Health behaviors
Weight loss	Fat loss	Undergraduates
Competence	Prescription	Wellbeing

The standard application form for ethical review of health-related research studies was completed. It then was reviewed one of the co-investigators, and the principle investigator. The completed form was submitted, to Beaumont Research Ethics’ Committee. It was classified as “service evaluation” that does not require ethical approval.

The survey was created to measure the study outcomes. It was an online questionnaire created using the internet service: SurveyMonkey.com. It had a total of 19 questions: 18 multiple choice questions and one free-text question.

The survey included cover a variety of aspects in relation to nutrition including eating/dietary habits, basic nutritional knowledge, perceptions about the importance of nutrition, and also students’ confidence in their ability to give nutritional advice to patients.

RESULTS

Approximately all undergraduate medical students in the direct entry program in the Royal College of Surgeons in Ireland were targeted (N ≈ 1200). The number of students completed the survey was 356, with a response rate of 30%. Female responses were slightly higher than males, with 53% and 47% respectively. The largest proportion of responses came from fifth year students with 26% of the total responses. 15% of first year students responded.

RESULTS OF THE QUESTIONNAIR AS FOLLOW

In the past 30 days, how many times did you eat out at restaurants? answers were:

5	48%
1-2	17%
3-5	16%
2-3	15%
None	5%

How many vegetables do you eat a day?

1-2	36%
2-3	29%
3-5	18%
+5	9%
None:	7%

How many servings of protein do you eat a day?

1-2	44%
2-3	37%
3-5	17%
None	2%

How many servings of food high in fat and cholesterol do you eat a week?

1-2	33%
3-4	32%
>4	30%
None	5%

How many servings of processed food do you eat a day? (Microwaveable meals, cereal, crisps, chocolate, biscuits, etc.)

1	46%
2	25%
>3	17%
3	11%

How many servings of your food do you prepare yourself a day?

2	35%
1	28%
3	22%
>3	16%

Do you know the calorie count of the things you eat?

No	45%
Most of the things	40%
Yes	15%

Do you know how to calculate BMR?

No	57%
Yes	43%

Do you know how to calculate BMI?

Yes	97%
No	3%

What is a healthy BMI?

18.5-24.9	98%
<18.5	1%
25-29.9	<1%
>29.9	<1%

What is your BMI?

19-25	59%
15-21	18%
25-31	17%
I don't know	5%
31-37	2%

Would you consider yourself as knowledgeable in nutrition?

Yes	70%
No	30%

How important do you think healthy eating is?

Very important	83%
Important	16%
Not important	1%

I am given adequate teaching about nutrition at medical school?

Agree	30%
Disagree	28%
Neither	23%
Strongly disagree	12%
Strongly agree	7%

Upon graduation, how confident will you feel in counseling patients concerning nutrition or prescribing patients nutritional advice?

Confident	49%
Mildly unconfident	25%
Extremely confident	14%
Not confident	8%
I am not sure	4%

If you have any comments on how to improve the curriculum in relation to nutrition, please add here **Table 1**.

Table 1. At the end of the survey, the respondents were asked to provide comments or ideas that may help in improving the curriculum in relation to nutrition. Total of 69 students gave feedback, of which 61 responses were analyzable. The comments are summarized in the following table.

Comment	N	%
More teaching in early years of college	25	41%
Case-based teaching	12	20%
Nutrition promotion in college	9	15%
Specific teaching on patients' counseling	5	9%
Personal knowledge gained outside the class	3	5%
Provide links of reliable resources	2	3%

Provide lectures by dieticians	2	3%
More insight from doctors	1	2%
Elective course	1	2%
Nutrition teaching for different ethnicities	1	2%

The vast majority of students (83%) rated healthy eating as “very important” for patients’ wellbeing, quality of life and treatment outcome.

Almost two thirds of the respondents consider themselves as either “confident” or “extremely confident” in counseling patients about diet and prescribing nutritional advice to patients (Figures 1 and 2).

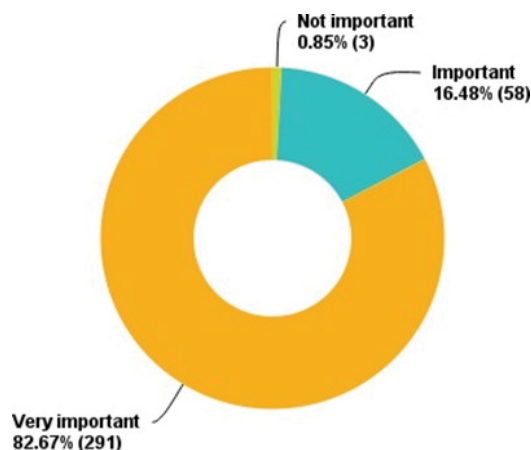


Figure 1. The vast majority of students (291) rated healthy eating as “very important” for patients’ wellbeing, quality of life, and treatment outcome.

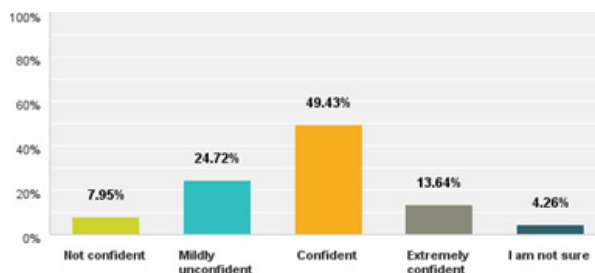


Figure 2. Almost two thirds of the respondents consider themselves as either “confident” or “extremely confident” in counseling patients about diet and prescribing nutritional advice to patients.

Among the “confident” and “very confident” students, almost a quarter reported eating 1-2 vegetables a day, (Figure 3) and eating more than 4 servings of foods high in saturated fats a week (Figure 4).

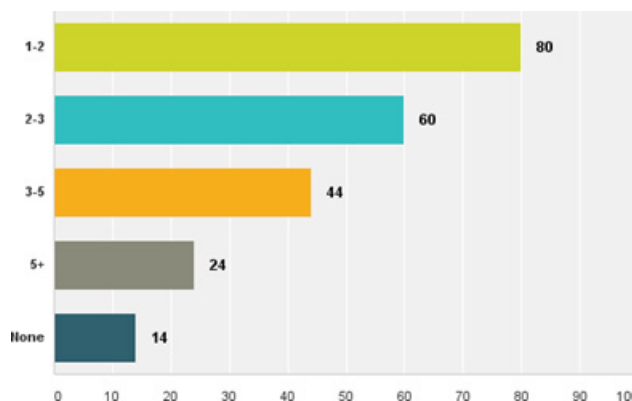


Figure 3. Among the (222) students who described themselves as either “confident” or “very confident” in relation to prescribing nutrition to patients, the majority (80) eat only 1-2 servings of vegetables a day.

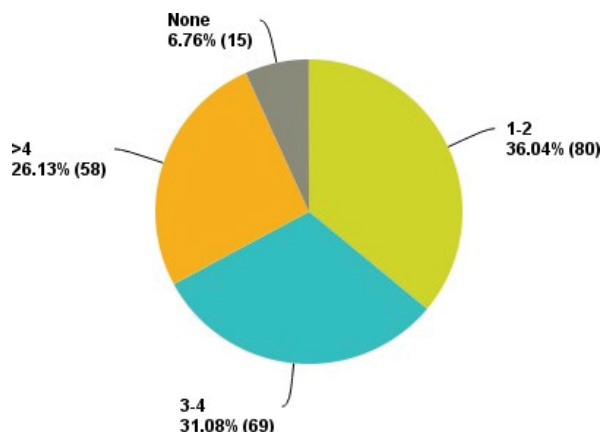


Figure 4. Almost 26% of the confident and very confident students reported eating more than 4 servings of foods high in saturated fats a week.

Figure 5 illustrates that the number of first year students who believe they are “knowledgeable” in nutrition is 12% higher than their colleagues in 5th year, with 75% and 63% respectively.

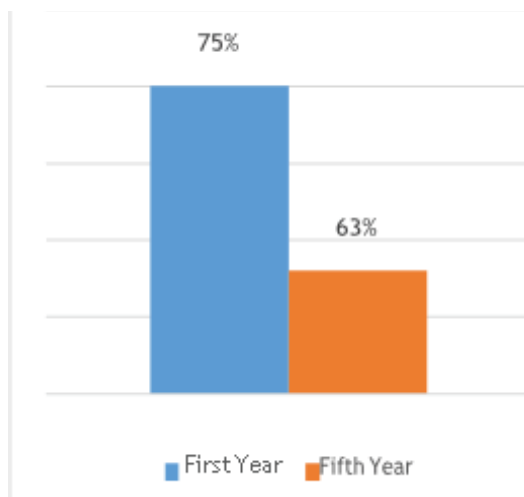


Figure 5. The number of first year students who believe they are “knowledgeable” in nutrition is 12% higher than their colleagues in 5th year, with 75% and 63% respectively.

The vast majority (84%) of students who are “confident” and “extremely confident” believe they are “knowledgeable” in the topic of nutrition. However, almost half of them did not know how to calculate BMR in **Figure 6**.

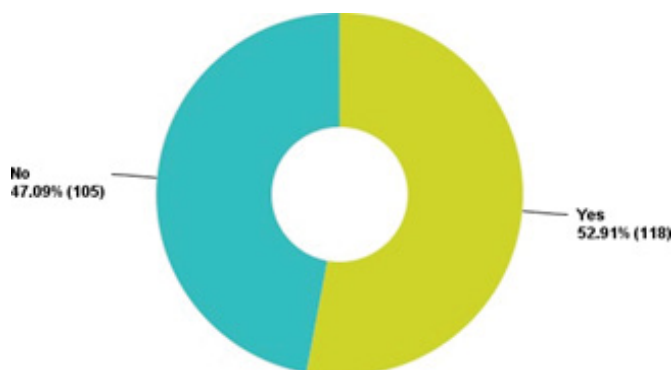


Figure 6. Almost half of the “confident” and “extremely confident” students did not know how to calculate BMR.

Figure 7 illustrates that more than one third of students who demonstrated nutrition’s knowledge, by correctly answering questions and thought they are “knowledgeable”, in question 12, consumed 2 or less servings of foods high in fats and cholesterol a week [9,10].

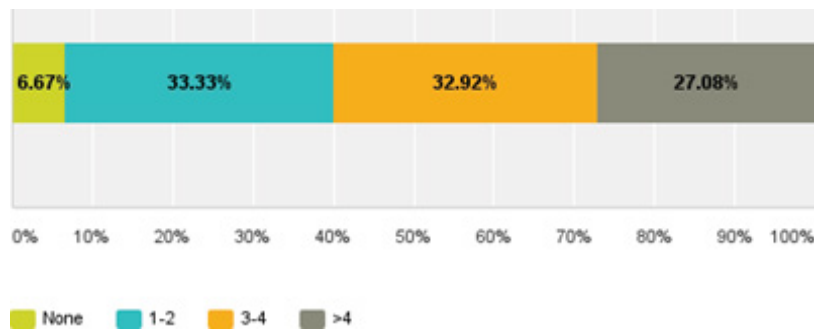


Figure 7. More than third of students who demonstrated nutrition's knowledge, by correctly answering questions (9-10), and thought they are "knowledgeable" in question 12, consumed 2 or less servings of foods high in fats and cholesterol a week.

There was a proportional relationship between the intake of vegetables and self-reported knowledge about the topic of nutrition. The higher the intake, the higher the level of knowledge reported. Among students who eat more than 5 vegetables a day, 97% reported being "knowledgeable" in the topic of nutrition. Opposing to only 46% in the group who reported consuming none. **Figure 8** illustrates the relationship.

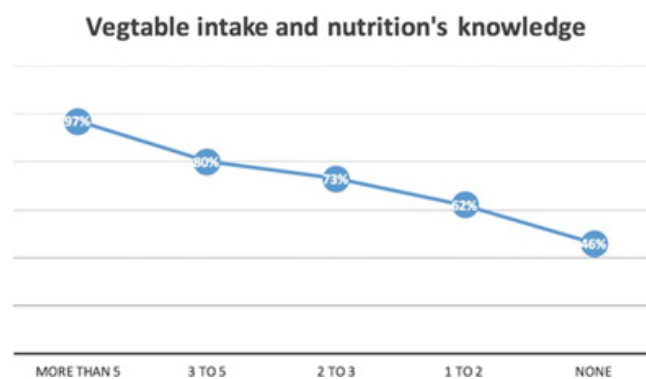


Figure 8. A proportional relationship between the intake of vegetables and self-reported knowledge about the topic of nutrition.

DISCUSSION

The study demonstrates that the majority of RCSI students perceive nutrition as important for patient health outcomes and quality of life. Also, the students generally feel confident in prescribing nutrition to patients. However, a considerable number of undergraduates have poor health habits which must be identified. It has been documented that a large proportion thinks they are knowledgeable in the topic. Based on literature review, and survey results, we feel that the integration of nutrition's course in the curriculum may increase students' perceptions, confidence and attitudes toward nutrition, and may result in increased rate and improved quality of patients counseling regarding prevention. Finally, the study briefly explains two examples of nutrition's teaching interventions that are done internationally, including the PMN course in Harvard, and the intensive package produced by NNEdPro in England.

A critical finding was that the majority of students, (85%) perceived healthy eating as "very important" in relation to patients' outcomes and wellbeing. We feel that this is encouraging as it has been documented that students' perceptions were positively related to their own health habits^[1]. These perceptions will strongly motivate the future health promotion and prevention and most importantly, they will facilitate the adoption of preventative behaviors if risky ones are addressed^[2].

One of the important findings of the study was that almost two thirds of RCSI undergraduates, including first year and fifth year students, reported feeling either "confident" or "extremely" confident in their ability to counsel patients about nutrition (**Figure 2**). It is possible that this confidence stems from personal knowledge gained outside the curriculum. It has been documented in our study that few students confirmed this explanation (**Table 1**). We are afraid that the resources backing up that confidence and knowledge, might be unreliable or invalid.

Another finding was that the majority of respondents, even among the group who rated themselves as either "confident" or "very confident" in relation to nutrition's prescription, actually have poor personal habits.

Figure 2 shows that most students, (80) reported eating only 1-2 vegetables a day. In addition, **Figure 6** shows that almost a quarter have high intake of foods rich in saturated fats regularly. Because physicians with better health habits report more preventive counseling we are afraid that the opposite is true, and having poor habits result in less patient's preventive counseling^[14-18].

Figure 5 demonstrates that there are more first year students who consider themselves as “knowledgeable” in nutrition as their colleagues in fifth year. A casual interpretation is that student’s knowledge was gained based on personal interest outside the curriculum. It could also be that more junior students are less aware of the depth of knowledge expected of them as qualified doctors and so rate their competency higher than a final year student who is more conscious of the expected standard. We cannot confirm for sure that is the former is the only reason, but it is supported by the idea that if the information gained from formal teaching in college, a senior student should feel more informed compared to junior colleagues, not the opposite. If this is indeed the case, we are concerned about the validity and reliability of such information.

There was a proportional relationship between the intake of vegetables and self-reported knowledge about the topic of nutrition. The higher the intake, the higher the level of knowledge reported. Among students who eat more than 5 vegetables a day, 97% reported being “knowledgeable” in the topic of nutrition. Opposing to only 46% in the group who reported consuming none. **Figure 8** illustrates the relationship. We cannot confirm why that is, but we hypothesize that knowledge in the topic of nutrition, especially the positive effects of healthy eating, might motivate adopting healthier habits.

The study demonstrates that developing teaching intervention is strongly recommended. We feel that it will further increase student’s confidence, reliable knowledge, and change their habits to healthier ones, in the subject of nutrition. One of the main findings, shown in **Table 1**, is that almost two thirds of respondents expressed the need for further nutrition’s teaching. This is consistent with other studies [3]. The majority of undergraduates believed that the teaching is appropriate the most in first years. Others thought that case-based teaching is specifically the type of intervention they perceive as most useful. Integration of nutrition’s education within the cardiovascular module in early years is shown to improve the healthy habit of students.

The learning objectives implemented mirrored that of Nutrition’s Academic Award [5]. Adapting personal healthy habits by the students can influence the patient’s counseling about prevention. Innovative preventive medicine and nutrition (PMN) course in Harvard, has been shown to increase students’ confidence in their ability to assess and change patients’ diets. The students also reported that their own diets have improved. The course, originally a lecture series, evolved to include innovative teaching methods, such as problem-based teaching, and student led debates. The curriculum includes 4 weeks of preventive medicine, 8 weeks of clinical nutrition, 1 week of exercise and a final examination. Such courses in nutrition’s education may increase future doctors counseling rates about prevention [15].

The Need for Nutrition Education Programme (NNEdPro) has developed an intenteive package that lay the foundations of nutrition’s knowledge, and raises awareness about management and prevention of malnutrition. Each two days’ workshop consisted of a combination of lectures, demonstrations and mini-PBL. There were both statistically and educationally significant increase in students’ Knowledge, Attitudes and Perceptions (KAP) [18].

CONCLUSION

The majority of RCSI students believe nutrition is hugely important for patients. Generally, they feel confident in advising patients’ about diet and nutrition. However, a considerable number reported negative dietary habits, which must be addressed. Also huge proportion thinks they are knowledgeable in the topic. We recommend integrating nutrition’s teaching interventions because they improve students’ perceptions and habits, which in turn affect patients’ counseling about prevention.

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