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BRIEF REPORT

Survey of Nutrition Education Among Medical Students

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ABSTRACT

Introduction: The current literature regarding both specific interventions and the current level of nutrition education in the United States is scarce. The purpose of this paper is to provide medical student perspectives on both the degree and necessity of nutrition education during medical school.

Methods: Medicine in Motion (MM) is a non-profit student-run organization founded in 2018 that aims to address burnout in medicine through physical activity, community service, and philanthropy. MM issued a survey to nine of its chapters in January 2021 to assess a range of topics including burnout, physical activity, and nutrition education.

Results: Of 5500 invited students, 1182 (21.5%) responded. An average of 1.2 hours of formal nutrition education per year was reported across all participants. Students who received any degree of nutritional education reported 2.9 hours per year. Most students (57.6%) had not participated in a medical school course that provided formal education in nutrition. Of those that did participate in a nutrition course (42.4%), the course was required for 84.7% of students and the majority (80.1%) received 0-10 hours of nutrition education. Most respondents (88.7%) reported that requiring formal nutrition education should be a graduation requirement and a similar number of students (89.3%) believe medical students should receive formal training on nutrition counseling for patients. The majority (93.3%) of students either somewhat or strongly agreed that understanding the effects of nutrition/eating decisions on the human body is critical to maximizing patient care.

Conclusion: Based on prior studies, physicians feel underprepared to provide nutrition counseling to their patients despite the large role poor diet plays in the burden of disease. Most medical students in this cohort believe that understanding nutrition is vital to maximize patient care. Funding and curricular changes should be allocated towards expanding the nutrition curriculum across U.S. medical schools.

INTRODUCTION

Physicians play a vital role in patient health not just as medical experts but as facilitators who can educate and empower patients to make healthy lifestyle choices [1]. As the prevalence of chronic diseases such as obesity, hypertension, and diabetes mellitus continue to increase across the United States, additional emphasis has been placed on a healthy lifestyle in preventing the morbidity and mortality from these illnesses [2]. One area of particular interest in recent years has been the impact of nutrition on disease [3-5]. Many patients have difficulty understanding what constitutes a "healthy" diet, which leads to significant and avoidable morbidity and mortality [6]. According to a study by the United States Burden of Disease Collaborators, poor diet was a risk factor for 529,299 deaths in 2016 [7]. "Healthy" diet is a complex topic but generally can refer to diets that are high in plant-based foods (i.e., fresh fruit and whole grain) and lean animal-based foods (i.e., chicken breasts, fish); they are often lower in calories and cholesterol in comparison to less healthy alternatives [3, 8]. Eighty-four percent of individuals with dietary risk factors died in 2016 secondary to cardiovascular disease [7]. Poor diet is also the primary cause of obesity, which increases the risk for hypertension, diabetes mellitus, cardiovascular disease, osteoarthritis, sleep apnea, among other illnesses [9].

One predictor of diet quality is health literacy, or the ability to make appropriate health decisions based on access to and understanding of basic health-related services and information [6]. Poor health literacy is associated with certain poor nutrition decisions; individuals with poor health literacy are likely to have more difficulty with understanding the information presented on food labels and properly portioning food as well as engage more in obesogenic feeding behaviors [10]. Physicians have a significant role in promoting good health literacy in their patients – by using easy-to-understand patient education

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materials, limiting use of jargon, and not making assumptions about patients' understanding of health, physicians can improve the health literacy of their patients [11].

Physicians who have undergone health literacy training are more likely to implement strategies and materials that improve the health literacy of their patients [11]. However, despite the role that an unhealthy diet plays in increasing disease burden, and the importance of healthy literacy training, many physicians at the resident, fellow, and attending levels feel unprepared to advise patients on healthy dietary choices [12-15]. Contributing to this deficit may be the relatively low number of reported hours of medical school education and instruction focused on nutrition [16-19]. A 2015 review by Adams et al. found that an average of 19.0 curricular hours were dedicated to nutrition or dietary decision making across 121 medical schools during the 2012-2013 academic year [17]. This average falls short of the National Research Council's (NRC) recommendation of a minimum of 25 hours in nutrition education [18]. Barriers to expanding the amount of time dedicated to educating medical students on this topic include a lack of faculty capable of teaching nutrition, insufficient direct funding, and an already congested medical school curriculum [18].

The current literature regarding specific interventions and level of nutrition education in the United States are scarce [16-18]. This paper aims to provide medical student perspective regarding the degree and necessity of nutrition education during medical school.

METHODS

Medicine in Motion (MM) is a non-profit student-run organization founded in 2018 that aims to address burnout in medicine through physical activity, community service, and philanthropy [20-21]. MM issued a survey to nine of its chapters in January, 2021 to assess a range of topics including burnout, physical activity, and nutrition education. Chapters were selected to participate in the survey if they had organized MM events in 2020. Surveys were distributed electronically to students enrolled at nine medical schools with MM chapters in January 2021. Inclusion criteria included being at least 18 years of age and currently enrolled in medical school. Members of each MM chapter distributed the survey via whole-class student email listservs. There was no identifiable information collected. No additional information or study material was provided prior to the survey. Participation was voluntary with participants informed that by completing the survey they had a chance to win a MM-embroidered New Balance sports jacket. The survey contained 37 questions with only one answer allowed per question. Questions pertaining to nutrition either asked for a single-choice "yes" or "no" or an answer choice on a 5-point Likert scale. We omitted a specific definition for nutrition education as the term likely has different meanings across different institutions based on students' available course selection. Chi-squared tests were used to analyze the data with a p-value < 0.05 considered statistically significant. The study was considered minimal risk and exempt from ethical review by the Harvard Medical School Institutional Review Board (IRB20-1953).

RESULTS

Of 5500 invited students, 1182 (21%) responded. Mean age was 26 years old, 61% were female (**Table 1**). Fifty-seven percent identified as White, 26% Asian, and 5% Black. Students were enrolled across nine different medical schools in the United States. The majority (712, 60.4%) of students were in the first two years of medical school.

Table 1: Demographics among medical students who responded to survey (n=1182)

Characteristic		Mean (SD) or N (%)
Age, years		25.3 (2.6)
Sex		
	Male	39.1%
	Female	60.9%
Self-reported Race		
	White/Caucasian	57.1%
	Asian	26.0%
	Black/African American	5.4%
Ethnicity		
	Hispanic or Latino or Spanish Origin	9.2%
Year of School		1179*
	Year 1	420 (35.6%)
	Year 2	292 (24.8%)
	Year 3	248 (21.0%)
	Year 4	219 (18.6%)
University		
	Boston University School of Medicine	137 (11.6%)
	Geisel School of Medicine at Dartmouth College	116 (9.8%)
	Harvard Medical School	162 (13.8%)
	Tufts University School of Medicine	102 (8.6%)
	University of California-San Francisco School of Medicine	61 (5.2%)
	University of Massachusetts Medical School	130 (11.0%)
	University of Rochester School of Medicine	184 (15.6%)
	Wayne State University School of Medicine	211 (17.9%)
	Weill Medical College of Cornell University	77 (6.5%)

* 3 participants did not select Year in School

Of the 37-question study, six questions were pertinent to students' perspectives on nutrition and its role in the medical school curriculum. An average of 1.2 hours of formal nutrition education per year was reported across all participants. Students who received any degree of nutritional education reported 2.9 hours of formal nutrition education per year. The study found that 57.6% of students had not participated in a course during medical school that provided formal education in nutrition/eating decisions. Of those that did participate in a nutrition course (42.4%), the course was required for 84.7% of students and the majority (80.1%) received 0-10 hours of nutrition education. The majority (88.7%) of all respondents reported that requiring formal nutrition education should be a graduation requirement and a similar number of students (89.3%) believe medical students should receive formal training on nutrition counseling for patients. Lastly, nearly all (93.3%) of the respondents either somewhat or strongly agreed that understanding the effects of nutrition/eating decisions on the human body is critical to maximizing patient care.

Chi-square tests demonstrated significant differences in several outcomes across the years of schooling (years 1 - 4/5), including nutrition course participation ($p < 0.00001$), required

vs. elective course status ($p = 0.04$), hours of nutrition education ($p = 0.01$), agreement that medical schools should require formal nutrition in order to graduate ($p = 0.02$), and agreement that understanding the effects of nutrition/eating decisions on the human body is critical to maximizing patient care ($p = 0.01$). There was no statistically significant difference across student year regarding agreement that medical schools should require formal training on patient counseling for nutrition/eating decisions in order to graduate ($p = 0.27$).

The majority (83.3%) of first year students received no formal nutritional education, and among the minority that did receive some nutritional education, 45.7% received fewer than 3 hours of training. Second year students reported the highest percentage of required nutritional course instruction at 90.6%. Second year students also had the highest proportion (92.5%) of students who agreed that medical schools should require formal nutrition education (beyond metabolism) to graduate while first year students had the highest percentage (91.4%) who agreed that medical schools should require formal training on patient counseling for nutrition/eating decisions to graduate. Third year medical students had the lowest percentage of agreement with those statements and had the lowest percentage (58.9%) who strongly agreed that understanding the effects of nutrition/eating decisions on the human body is critical to maximizing patient care.

DISCUSSION

In this observational cohort study of medical students belonging to a nonprofit organization dedicated to mitigating physician burnout, students who reported receiving any degree of nutritional education reported an average of only 2.9 hours per year. We also observed significant differences, based on year of school, on nutrition course participation, hours of nutrition education, and student agreement that medical schools should require formal nutrition education as a requirement for graduation. The vast majority (nearly 90%) of students believe that nutrition courses during medical school should be required in order to graduate.

This is similar to the findings of previous studies assessing the time spent on nutrition education in medical school [16-19]. Our study demonstrates a problematic gap in the quality of US medical education, considering the burden of chronic disease in the US and the relationship with diet, as well as the overwhelming majority of medical students agreeing that understanding the effects of nutrition on health outcomes is critical to maximizing patient care [7, 22-23].

Most physicians do not feel confident in their abilities to discuss nutrition and dietary choices with their patients [12-15]. A large contributor to this deficit is the lack of education during medical school. Our results, in concordance with previous studies, demonstrate that medical students express a strong desire to incorporate evidence-based nutrition education and patient counseling techniques into their medical education and practice [22-23].

This aspiration to obtain increased competence in nutrition counseling to patients coincides well with the alarming increase in obesity in the United States [24-25]. Despite this increase, 40 of 141 medical schools in a survey issued by Butsch et al. in 2018 have no programming directed towards obesity education, nor do they anticipate creating one. Fifteen percent of respondents reported that basic obesity pathophysiology and physical examination of a patient with obesity were covered "very little" or "not at all." Only 10% of respondents stated that they believed their students would be "very prepared" to manage patients with obesity [26].

A 2019 study by Aggarwal et al. further highlights the effect that inadequate nutrition education can have not only on patients but physicians themselves. Of 297 physicians surveyed, only 6% could identify both the American Heart Association's daily recommendation of fruit and vegetable servings as well as the daily sugar limit of men and women [27]. Additionally, only 35% reported consuming at least 2 vegetable and 3 fruit servings per day. This is significant because a poor diet can lead to weight gain to the point of overweight or obesity - a consequence not only for a physician but potentially their patients as well. Bleich et al. found that physicians of normal body mass index (BMI) engaged in a significantly greater number of conversations

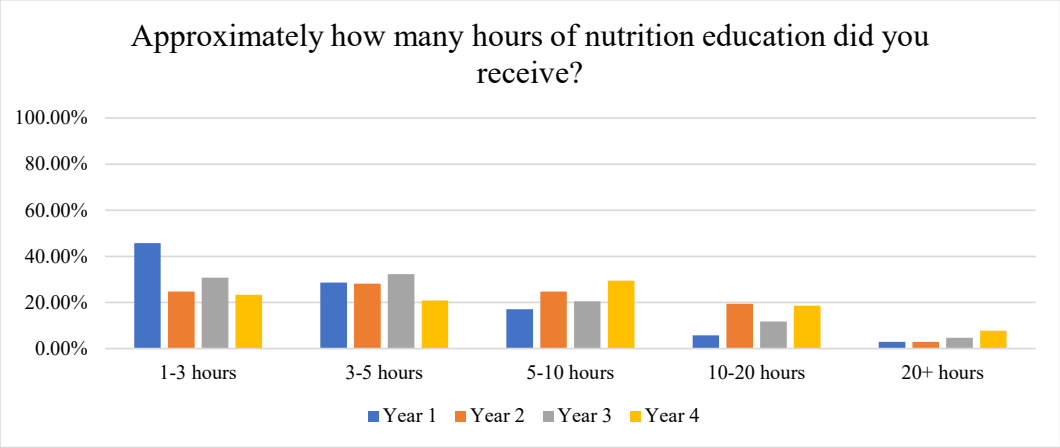

Figure 1: Hours of Nutrition Education Participation by Year of School

Table 2: Amount of Nutrition Instruction – By Year of School

Question	Answer	Year 1	Year 2	Year 3	Year 4+5	Chi-Square (p-value)
Have you participated in a medical school course that provides formal medical education in nutrition / eating decisions (beyond metabolism)?	Yes	70 (16.7%)	173 (59.2%)	127 (51.2%)	130 (59.4%)	$X^2 = 181.5$ ($p < 0.00001$)
	No	350 (83.3%)	119 (40.8%)	121 (48.8%)	89 (40.6%)	
	Total	420	292	248	219	
Was the course required or an elective?	# Required	57 (81.4%)	155 (90.6%)	99 (79.2%)	108 (83.7%)	$X^2 = 8.2$ ($p = 0.04$)
	# Elective	13 (18.6%)	16 (9.4%)	26 (20.8%)	21 (16.3%)	
	Total	70	171	125	129	
Approximately how many hours of nutrition education did you receive?	1-3 hours	32 (45.7%)	42 (24.7%)	39 (30.7%)	30 (23.3%)	$X^2 = 28.5$ ($p = 0.01$)
	3-5 hours	20 (28.6%)	48 (28.2%)	41 (32.3%)	27 (20.9%)	
	5-10 hours	12 (17.1%)	42 (24.7%)	26 (20.5%)	38 (29.5%)	
	10-20 hours	4 (5.7%)	33 (19.4%)	15 (11.8%)	24 (18.6%)	
	20+ hours	2 (2.9%)	5 (2.9%)	6 (4.7%)	10 (7.8%)	
	Total	70	170	127	129	
Should medical schools require formal nutrition education (beyond metabolism) to graduate?	Yes	377 (89.8%)	270 (92.5%)	210 (84.7%)	189 (86.3%)	$X^2 = 9.9$ ($p = 0.02$)
	No	43 (10.2%)	22 (7.5%)	38 (15.3%)	30 (13.7%)	
	Total	420	292	248	219	
Should medical schools require formal training on patient counseling for nutrition / eating decisions to graduate?	Yes	384 (91.4%)	261 (89.4%)	215 (86.7%)	194 (88.6%)	$X^2 = 3.9$ ($p = 0.27$)
	No	36 (8.6%)	31 (10.6%)	33 (13.3%)	25 (11.4%)	
	Total	420	292	248	219	
Understanding the effects of nutrition/eating decisions on the human body is critical to maximizing patient care.	Strongly Disagree	9 (2.1%)	6 (2.1%)	8 (3.2%)	8 (3.7%)	$X^2 = 25.6$ ($p = 0.01$)
	Somewhat Disagree	1 (0.2%)	1 (0.3%)	0 (0.0%)	3 (1.4%)	
	Neither Agree nor Disagree	9 (2.1%)	8 (2.7%)	13 (5.2%)	13 (5.9%)	
	Somewhat Agree	99 (23.6%)	67 (22.9%)	81 (32.7%)	52 (23.7%)	
	Strongly Agree	302 (71.9%)	210 (71.9%)	146 (58.9%)	143 (65.3%)	
	Total	420	292	248	219	

regarding weight loss (30% vs. 18%, *p = 0.001*) and regular exercise (73% vs. 57%, *p = 0.001*) in comparison to overweight/obese physicians [28]. Moreover, patients show a greater level of trust and higher likelihood of following the medical advice of a physician of normal weight (vs. one who is overweight or obese) [29]. Thus, it is important for physicians to receive adequate nutrition education in order to maintain their own wellbeing.

There are several approaches to further integrating nutritional education into the current Standards for Accreditation written by the Liaison Committee of Medical Education (LCME), the primary medical education accrediting agency in the United States [30]. Learning how to provide nutritional education is relevant to all nine facets of the 7th Standard: Curriculum Content, especially 7.6 Structural Competence, Cultural Competence, and Health Inequalities [18, 31]. Additional specifications and requirements for nutrition instruction would ensure all schools provide at least a degree of nutrition education to their students.

A lack of standardization of the nutrition curriculum across U.S. medical schools results in difficulty comparing the impact of the broad range of instruction. In a 2020 systematic review conducted by Bassin et al., nutrition learning experiences across 30 medical schools widely ranged in their form of assessment [18]. Further research is needed to expand upon the effectiveness of current nutritional education models prior to any attempts at standardizing the formal nutrition curriculum across medical schools.

Additionally, questions that focus on the health impacts of a poor diet could be included in the United States Medical Licensing Examinations to reinforce the importance of this critical subject throughout training. These standardized exams are required for residency acceptance. Thus, increasing the number of nutrition-related questions assessing student knowledge on

quality of diet, BMI, nutritional deficiencies, nutrition-related diseases, excessive visceral fat, and high- and low-density lipoproteins, could result in a greater incentivization for students to study both the management of diseases like obesity and diabetes as well as ways to assist patients approach their diet and nutrition.

Furthermore, to overcome previously mentioned barriers of lack of physician expertise, medical schools could utilize the knowledge of registered dietitians and health coaches to provide educational opportunities through shadowing, lecturing, and community opportunities [32-33]. The importance of future physicians' ability to provide effective nutritional guidance and overall comprehensive care for all patients is further emphasized by the persistence of food-related disparities throughout the United States. Food insecurity is more prevalent in Black, American Indian/Alaskan Native, and Hispanic populations compared to white Americans [34-37]. Racial disparities in food insecurity worsened during the coronavirus-19 pandemic [38]. Though the pandemic caused significant issues in food access for all populations, it exacerbated pre-existing inequities in American food structures, resulting in profound food insecurity for African American, Indigenous, and Hispanic communities [38-41]. In turn, these communities face disproportionately large levels of food-related health issues, including diabetes, obesity, and certain types of cancer [42-44]. The role of physicians in protecting and advocating for these underprivileged populations cannot be understated. Improved medical school education around diet and nutrition could result in a future generation of physicians who more holistically understand the factors behind community health and are better prepared to change their communities and serve their patients.

The proportion of students who strongly agreed that nutrition counseling was of great importance in maximizing patient care decreased from 71.9% of pre-clinical (1st and 2nd year) students to 61.9% of 3rd and 4th year students on their clinical rotations. In comparison to 90.9% of pre-clinical students, 85.4% of 3rd and 4th year students agreed that medical schools should require formal education on nutrition in order to graduate. A similar trend was seen between the pre-clinical and clinical students in response to whether medical schools should require formal training on counseling patients on nutrition (90.6% vs. 87.6%, respectively) in order to graduate.

Our study did not include further questions analyzing student rationale for answer selections. One possible explanation for these changing attitudes as students progress in their clinical training is the increased exposure to more acutely ill inpatients in the hospital for reasons that appear, in the moment, unrelated to their dietary intake. For example, discussions in the surgical intensive care unit of a patient status-post a coronary artery bypass graft often center around selection of vasopressors, vascular access, and/or mechanical ventilation for patients. While not pertinent to the intensive care patients are currently receiving, dietary decision making after patients are discharged is of utmost importance for post-surgical health and vitality [45]. Preventative nutritional education could have reduced the chances or severity of such an admission in the first place [46]. Research analyzing student rationale on why they believe formal nutritional education is or is not important as well as their quantifying students' exposure to informal discussion on nutrition during clinical rotations could be useful in providing more insight into the degree of nutrition-related discussions that occur during medical school.

This study has several limitations. First, our survey could have asked respondents whether courses focusing on nutrition education would be offered throughout their four years of medical school. If the respondent selected yes to this question, they could have been prompted to estimate how many hours of nutrition education they anticipated receiving. By failing to include these questions, our data may be underreporting the number of hours of nutrition education as 712 (60.4%) of the respondents were 1st and 2nd year students. Secondly, data regarding the number of hours of nutrition education received was self-reported and thus subject to recall bias [47]. The hours of nutrition education in medical school were not corroborated with the nine participant institutions as medical school curricula frequently change, perhaps more so in the two years following the coronavirus-19 pandemic [48-49].

Additionally, eight of nine chapters are in the Northeast region of the United States. This may change the students' perceptions of food, as the Northeast generally has more improved access to healthy food than other regions in the U.S., particularly the South and the Midwest [50]. Different perceptions of food insecurity could have resulted in biases. To obtain a more complete understanding of medical students' perceptions of food education, future studies should include representation from other regions. There may have been selection bias in students that chose to respond to this nutrition-related survey. Additionally, medical students generally experience structured curricula during their preclinical years in medical school and as a result, limited elective opportunities. The opportunity to explore clinical and classroom electives generally take place later in medical school, which may have influenced our results [51-59].

CONCLUSION

In conclusion, current physicians feel underprepared to provide nutrition counseling to their patients despite the large role poor diet plays in the burden of disease. Most medical students in this multi-institutional study believe that understanding nutrition is vital to maximize patient care. Funding and curricular changes should be allocated towards expanding the nutrition curriculum across U.S. medical schools.

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Appendix A

MiM Study Survey

Demographics
*We understand that gender, race, and ethnicity are fluid and ill-defined. We have included these questions to compare to previous research. If you feel uncomfortable answering, please feel free to leave blank. With any concerns, please email **contact info withheld from publication**

Medical School

- ○ Boston University Medical School
- ○ Geisel School of Medicine
- ○ Harvard Medical School
- ○ Tufts University School of Medicine
- ○ UCSF School of Medicine
- ○ University of Massachusetts Medical School
- ○ University of Rochester School of Medicine
- ○ Wayne State University School of Medicine
- ○ Weill Cornell Medical College
- ○ Other

Age _____

Year in medical school

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5

What is your stage in medical school?

- ○ Pre-clinical coursework
- ○ Clinical year
- ○ Advanced rotations/sub-internships
- ○ Research year
- ○ Other _____

Gender

- ○ Male
- ○ Female
- ○ Other _____

Race

- ○ American Indian or Alaska Native
- ○ Asian
- ○ Black or African American
- ○ Native Hawaiian or Other Pacific Islander
- ○ White/Caucasian
- ○ Other/Prefer Not to Say

Ethnicity

- ○ Hispanic or Latino or Spanish Origin
- ○ Not Hispanic or Latino or Spanish Origin

What specialties are you considering? (select all that apply)

- ☐ Allergy and Immunology
- ☐ Anesthesiology
- ☐ Colon and Rectal Surgery
- ☐ Dermatology
- ☐ Emergency Medicine
- ☐ Family Medicine
- ☐ Internal Medicine
- ☐ Medical Genetics and Genomics
- ☐ Neurology
- ☐ Neurological Surgery
- ☐ Nuclear Medicine
- ☐ Obstetrics and Gynecology
- ☐ Ophthalmology
- ☐ Orthopaedic Surgery
- ☐ Otolaryngology - Head and Neck Surgery
- ☐ Pathology
- ☐ Pediatrics

- [ ] Physical Medicine and Rehabilitation
- [ ] Plastic Surgery
- [ ] Preventive Medicine
- [ ] Psychiatry and Neurology
- [ ] Radiology
- [ ] Surgery
- [ ] Thoracic Surgery
- [ ] Urology
- [ ] Other
- [ ] Undecided

From March 2020 - Dec 2020, were you predominantly remote or in-person for medical school?

- ○ In-person (everything on campus)
- ○ Remote (everything off-campus)
- ○ Hybrid (mix)

Burnout Questions

How often do you experience the following?

	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every Day
I feel burned out from my work/studies	○	○	○	○	○	○	○
I have become more callous toward people since I began medical school	○	○	○	○	○	○	○

How much does each of the following contribute to your feelings of burnout?

	None at all	A little	A moderate amount	A lot	Severely
Lack of exercise	○	○	○	○	○
Lack of sleep	○	○	○	○	○
Poor diet	○	○	○	○	○
Childcare issues	○	○	○	○	○
Feelings of inadequacy	○	○	○	○	○
Exposure to patient suffering	○	○	○	○	○
Feeling socially disconnected from work community	○	○	○	○	○
Lack of formal mentorship (mentorship formally assigned to you by your institution)	○	○	○	○	○
Lack of informal mentorship (mentorship relationships you have formed on your own or informally)	○	○	○	○	○
Lack of enjoyment from class	○	○	○	○	○
Student Debt	○	○	○	○	○
Stress about grades/evaluation	○	○	○	○	○
Decreased engagement in hobbies or forms of self-care outside of work	○	○	○	○	○
Pressure to publish research	○	○	○	○	○
Stress about applying to residency	○	○	○	○	○
Competition between classmates	○	○	○	○	○
Other (if none check none)	○	○	○	○	○

Medical Education: Physical Activity Questions

Have you participated in a medical school course that provides **formal medical education in physical activity?**

- ○ Yes
- ○ No

Was the course

- ○ Required
- ○ Elective

Approximately **how many hours** of **physical activity education** did you receive?

- ○ 1-3
- ○ 3-5
- ○ 5-10
- ○ 10-20
- ○ 20+

Should medical schools require **formal physical activity education** (basics, physiology, etc.) to graduate?

- ○ Yes
- ○ No

Should medical schools require **formal training on patient counseling for physical activity** to graduate?

- ○ Yes
- ○ No

Understanding the effects of **physical activity and inactivity** on the human body is critical to **maximizing patient care**.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

Understanding the effects of **physical activity and inactivity** on the human body is critical to **maximizing patient care**.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

Medical Education: Nutrition Questions

Have you participated in a medical school course that provides **formal medical education** in **nutrition / eating decisions*** (beyond metabolism)?

*we understand the use of terms such as "nutrition," "eating decisions," can have many interpretations and do not wish to convey any sense of right from wrong, or judgment. The purposes of this survey and the questions are solely to understand from a **physiological and patient care perspective,** what levels of medical education are students receiving. If you have any concerns please email Grant Riew at grantriew@hms.harvard.edu.

- ○ Yes
- ○ No

Was the course

- ○ Required
- ○ Elective

Approximately **how many hours** of **nutrition education** did you receive?

- ○ 0-3
- ○ 3-5
- ○ 5-10
- ○ 10-20
- ○ 20+

Should medical schools require **formal nutrition education** (beyond metabolism) to graduate?

- ○ Yes
- ○ No

Should medical schools require **formal training on patient counseling for nutrition / eating decisions** to graduate?

- ○ Yes
- ○ No

Understanding the effects of nutrition/eating decisions on the human body is critical to maximizing patient care.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

Physical Activity Questions

During a **typical week**, how many **minutes** did/do you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

- ○ Before COVID-19 _____
- ○ Currently _____

During a typical week, how many minutes did/do you do moderate physical activities like walking (recreational/work/leisure), bicycling at a regular pace, or low intensity exercises?

- ○ Before COVID-19 _____
- ○ Currently _____

Are you currently getting as much physical activity as much as you would like?

- ○ Yes
- ○ No

If no, why not? (select all that apply)

- ☐ Lack of time
- ☐ Personal choice
- ☐ Lack of exercise facility
- ☐ COVID-19-related barriers

Which types of physical activity do you **currently do, since March, 2020,** in a typical week?

	More/Less/Same as a result of COVID-19			Frequency Per Week (days/week)			
	Same	Less frequently	More frequently	0	1	2	3+
Walking / Hiking	○	○	○	○	○	○	○
Running	○	○	○	○	○	○	○
Biking	○	○	○	○	○	○	○
Swimming	○	○	○	○	○	○	○
Rock climbing	○	○	○	○	○	○	○
Other sports (team or other)	○	○	○	○	○	○	○
High intensity interval training	○	○	○	○	○	○	○
Weight training / powerlifting	○	○	○	○	○	○	○
Bodyweight training	○	○	○	○	○	○	○
Group exercise classes (in person)	○	○	○	○	○	○	○
Group exercise classes (virtual)	○	○	○	○	○	○	○
Yoga	○	○	○	○	○	○	○

Mentorship & Exercise Participation

How satisfied are you with your **level of mentorship** throughout medical school thus far?

- ○ Extremely dissatisfied
- ○ Somewhat dissatisfied
- ○ Neither satisfied nor dissatisfied
- ○ Somewhat satisfied
- ○ Extremely satisfied

My institution should ____ to **facilitate mentorship connections**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Provide formal mentorship programs (mentors formally assigned to students)	○	○	○	○	○
Provide lists of mentors with expertise, interests, etc. and contact information such that students may reach out as desired	○	○	○	○	○
Hold optional informal events (meals, social mixers, exercise classes, arts/social interest groups, etc.) across levels of training where relationships may spontaneously form	○	○	○	○	○

How effective would each of the following be **to increase** the likelihood that you would participate in exercise or an exercise event?

	Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
Financially discounted exercise classes	○	○	○	○	○
Registration fees being donated toward medical research/charity	○	○	○	○	○
Logistics (transportation, food, registration, etc) for an event organized for you	○	○	○	○	○
Institutional support of exercise event	○	○	○	○	○
Post-event social mingles	○	○	○	○	○
Opportunity to participate alongside others from the same department/institution and level of training	○	○	○	○	○
Opportunity to participate alongside colleagues from multiple departments	○	○	○	○	○
Opportunity to participate alongside colleagues from different levels of training (student, resident, attending)	○	○	○	○	○
Opportunity to participate alongside colleagues from other areas of medicine (nursing, OT, PT, etc)	○	○	○	○	○
Opportunity to find mentors on an informal basis	○	○	○	○	○
Other (if none, choose not effective at all)	○	○	○	○	○