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TOPICS IN PODIATRIC MEDICAL EDUCATION

Comparing Self-Perceived Awareness to Actual Awareness of the Podiatric Profession Among High School and College Students

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Background: Over the past few years there has been a decrease in the number of applicants applying to podiatric medical school. It has been suggested that this may be due to unfamiliarity with the profession of podiatric medicine. The goal of this study is to shed light on the misconceptions and lack of awareness of podiatric medicine so that the profession can better

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bridge the gap in knowledge with a resultant strategy to better increase recruiting efforts. It is hypothesized that high school and college students will overestimate their awareness of podiatry and that a significant percentage of students will have a low actual awareness of the profession. It is presumed that this shortfall will be greater in high school students.

Methods: An eight question self-completion survey was created using RedCap that analyzed self-perceived and actual awareness of the podiatric profession. 318 students, 171 high school and 147 college, attending school within the state of Arizona completed the survey to test their actual and perceived knowledge of podiatry.

Results: A total of 294 survey responses met the inclusion criteria and were used in the final evaluation of data. 57.1% of high school students and 47.9% of college students described their knowledge of podiatry as “poor”. Each of the five true/false questions were answered incorrectly over 50% of the time. Overall, there was a statistically significant association between student's perceived knowledge of podiatry (good and higher, fair or poor) compared to their actual knowledge of podiatry.

Conclusion: Evidence supports that many high school and undergraduate students are unaware of the podiatric profession. Furthermore, there are many misconceptions that are believed about the profession that could be causing a decline in applicants over the last few years.

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Over the past two years, there has been a steady decrease in the number of applicants applying to podiatric medical school¹. This decline in applicants brings less competition to the field. By having more yearly applicants, it will allow for an increase in both quantity and quality of podiatric medical students. The American Podiatric Medical Association (APMA) has found that most student prospects were not likely to consider a career in podiatry unless given proper information about the podiatric field². They report that 68% of student prospects were familiar with a podiatrist compared to 96% of prospects who were familiar with an MD². Donai et al found only 55% of their survey respondents were familiar with podiatric medicine³. Prior research indicated that a lack in familiarity led to a lower rate of applications. Therefore, our study focused on assessing the level of familiarity of the profession in a region of the country where a podiatry school is situated nearby.

As the population ages, the prevalence of some conditions like diabetes and osteoarthritis will increase. These conditions and others are ones commonly treated by podiatric medicine physicians and therefore driving the need for increased podiatric care. The Baby Boomers as a group have also been heavily involved in fitness activities and their continued endeavors will additionally boost the demand for podiatric care.⁴ Yet, minimal evidence exists about the evaluation of awareness of the field of podiatry.

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Whitham et al. reported that training for a career in podiatry ultimately provided graduates excellent employability but there is still a decline in the number of those applying to podiatric colleges ⁵. Findings from their United Kingdom study resulted in four main themes surrounding exploring podiatry as a career option: the lack of awareness, inaccessible courses, unknown career status, and low positive role modeling in mainstream and popular media. Their study design involved a qualitative approach using informal group discussions led by an independent facilitator. The main limitation of their study design is that some members of the research team were podiatrists or members of the university, which may have influenced the interpretation of results. Our research methodology is grounded in a quantitative approach. This allows for finding statistical associations of trends and interpretation of numerical data to assist in drawing conclusions about a population whereas a qualitative study cannot.

The purpose of this study is to establish levels of perceived awareness of the podiatric profession. It is hoped that results of the study will upgrade knowledge amongst pre-health students and provide data that can aid in the recruitment efforts of the podiatric profession. It is hypothesized that a significant percentage of high school and college students are unaware of the breadth and scope of practice of the podiatric profession. Students' perceived knowledge of the profession is hypothesized to be greater than their actual knowledge.

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METHODS

Institutional review board approval for IRBAZ-5045 was obtained at our institution, Midwestern University on January 17, 2022. Surveys were collected consecutively between January 2022 to February 2023 and stored anonymously on RedCap.

Survey

The survey was designed as a descriptive quantitative research analysis which included an eight question self-completion questionnaire on RedCap, a web-based survey program. The questions were structured as true or false in the theme of gathering information related to the respondees' knowledge of podiatry (Figure 1). The questions were created by the research team, biostatistician, and an expert in the field of podiatry based on common misconceptions frequently heard about the profession. The survey was not based on any previous survey. The questionnaire was piloted among four podiatry students and staff at Midwestern University before the survey was distributed as a convenience sample. The survey was taken online electronically, and the piloting process helped ensure the questionnaire was relevant to podiatric medicine and its common misconceptions. The purpose of piloting amongst podiatry students helped uncover any unclear or ambiguous wording in the survey questions. Piloting

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also allowed the researchers to assess the length and complexity of the survey. If the survey is too long, participants may easily become disengaged. Lastly, the survey was piloted to allow researchers to identify any technical difficulties with the survey platform or administration process. This included checking for compatibility across different devices and browsers, ensuring that skip logic and branching instructions worked correctly. The study was cross-sectional in design.

Participants of this study included students enrolled in a high school or college program in the state of Arizona. High school students were localized to school districts within Maricopa County while college students were recruited from Glendale Community College, Grand Canyon University, Arizona Christian University, Arizona State University, and Northern Arizona University. There was no preference for gender, race, or ethnicity. This research population was chosen as the population that would be targeted to better understand the level of familiarity of the profession in a region of the country where a podiatry school is situated nearby.

The survey was distributed via email or in-person by having participants scan a QR code. In-person distribution was done by the authors of the paper and another podiatry student by randomly asking college students on or near a college campus. Additionally, A limited subset of high school participants was administered the survey in person at the annual high school day event that Midwestern University hosts. The surveys taken in person were distributed via an

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iPad after the distributor pulled up the survey online. All information was gathered in redcap at a live response rate. No data was manually inputted.

Survey administrators were explicitly directed not to let students take the survey multiple times and not to address any inquiries regarding the survey until submission was confirmed. The survey was administered between April 2022 and February 2023. The totality of how many students encountered the survey is unknown. The survey should only be taken once per individual. This was laid out in the instructions and teachers administering the survey to high school students were instructed to only allow one survey per individual.

Data was collected from 171 students, ages ranging from 14-18 years old, at participating high schools and 147 college students currently attending an accredited undergraduate university in Arizona. They were presented with all eight questions on one page and all survey responses were handled confidentially. All data stored in RedCap was only accessible by the research team and biostatistician.

Self-perceived awareness was measured as poor to excellent using question #2. Actual awareness was assessed using questions #3-7 (Figure 1). Each actual awareness question answered correctly scored the participant one point in this category. A numerical comparison of the participants' perceived awareness score to their actual awareness score was analyzed using

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R (version 4.0.2, R Foundation for Statistical Computing, Vienna, Austria) and a p-value of <0.05 was considered statistically significant.

Informed consent was embedded into the survey document where it required completion prior to survey being available. A total of 24 surveys were excluded because no parental consent was given, the survey was not completed in its entirety, or the last question on the survey was answered incorrectly. If surveys were not complete and data was missing, then the survey was not included in final data analysis.

Statistical Analysis

A total of 318 students responded to the survey. Student responses were omitted if no parental consent was given, surveys were not completed in its entirety, or the last question on the survey was not answered correctly. The final number of students that were used in the analysis is $n=294$. Summary statistics (counts and percentages) were calculated for all survey questions for college and high school students separately (Table 1). The comparisons between the responses to the questions between college vs. high school students were conducted using a chi-square test which assessed whether there was a difference in the distribution of responses between the student groups. A p-value < 0.05 indicates that the academic level was associated with their knowledge level.

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A similar analysis was conducted for the association between the knowledge of podiatry questions (true/false/unsure response options) compared to the student's perceived knowledge of podiatry (single Likert scale questions of Good/Very Good/Excellent, Fair, and Poor) (Table 2). The perceived knowledge of podiatry question was combined for some categories (Good/Very Good/Excellent) due to low numbers in a few of those response options. All analyses were conducted in R version 4.2.2 (R Core Team 2022). Questions answered "unsure" were marked incorrect and used as such in the statistical analysis.

RESULTS

A total of 294 survey responses consented and were used in the final evaluation of data. 57.1% of high school students and 47.9% of college students described their knowledge level of podiatry as "poor", with a relative difference of 10% between the two cohorts. Four out of the five true/false questions were answered incorrectly over 50% of the time (Table 1). A total of 54 students out of 294 described their self-perceived knowledge of podiatry as good and higher, but 27.8% of those respondents answered the first knowledge question, "Podiatrists specialize in diseases of children", incorrectly (Table 2). When comparing students' self-perceived awareness with their actual awareness, all five actual awareness questions had a P value of less than 0.001 signifying that there was discordance between students' perceived and actual

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awareness of the podiatric profession (p-value <0.01). For example, students that said that podiatrists can do surgery reported a higher self-perceived knowledge level (68.5%) compared to students that were unsure and reported fair (34.1%) or poor (63.2%) as their self-perceived knowledge level (Table 2). Percentages were also obtained from the following questions that were answered incorrectly amongst the students who classified their knowledge of podiatry as good and higher: 31.5% answered false/unsure to podiatrists having surgical privileges, 42.6% answered true/unsure to two years of graduate education, 44.4% answered true/unsure to only being able to practice in private practice, and 40.8% answered false/unsure to the requirement of residency training.

DISCUSSION

There has been a substantial decline in the number of applicants applying to podiatric medical school despite the essential need for national foot health⁶. Evidence supports that many high school and undergraduate students are unaware of the breadth and scope of practice of the podiatric profession.

It is hypothesized that high school and college students will overestimate their awareness of podiatry and that a significant percentage of students will have a low actual

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awareness of the profession. It is presumed that this shortfall will be greater in high school students, which was proven to be true based on our data interpretation. As was noted in the APMA report, efforts at marketing the profession must be directed at a younger audience than previously thought². It was interesting that our data reflected that high school students only reported a 10% higher self-awareness level of “poor” compared to their collegiate counterparts (Table 2).

We collected responses from 294 people for our survey, more than half of the high school students (57.1%) and nearly half of the college students (47.9%) thought they had poor knowledge about podiatry. Also, out of the 294 students, 54 believed they had good knowledge of podiatry. However, surprisingly 27.8% of them incorrectly answered the knowledge question, "Podiatrists specialize in diseases of children" (Table 2). This suggests that even some who felt confident about their knowledge had misconceptions about podiatry. A significant statistical percentage of high school and college students' self-perceived knowledge of the profession obtained from the study proved to be greater than their actual knowledge, concluding that there are many misconceptions that are believed about the podiatric profession.

This finding is impactful because identification of a significant statistical disparity between students' perceived knowledge and their actual knowledge of a profession suggests the need of broader implications for education, career guidance, professional image, policy,

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and further research. Misconceptions of podiatry could be one of the reasons causing a decline in applicants over the past few years, however, it is important to note that the decline of podiatric applications is likely a multifactorial issue. Other factors include negative healthcare media, the rising costs of graduate college programs, and the increasing number of DO schools could also be contributing to declining podiatric applicants⁷. Previous literature suggests that further educating admission counselors, impactful media marketing, and engaged podiatric practitioners could potentially help promote the field of podiatry and further influence podiatric awareness among high school and college students⁶.

LIMITATIONS

To our knowledge, this is the first questionnaire with a research methodology revolving around quantitative methods. Main limitations of our study include a relatively small proportion of students who participated and that there was no validity or reliability testing performed on the survey. Additionally, while steps were taken to avoid duplicate responses, the authors were unable to fully guarantee that surveys were not taken twice by the same student due to anonymity in data storage. The totality of how many students encountered the survey is also unknown. The survey design may also be prone to bias as it was not tested on the target population through a pilot phase before distribution. Questions were only tested by current

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podiatric medical students prior to distribution, so while the authors attempted to keep the questions about the profession based off basic common misconceptions, the authors have an inherent knowledge bias when forming the questions. Demographic data and response rate were also unable to be obtained. Furthermore, the surveys were not conducted nationwide thus not necessarily affecting reliability, but do affect the generalizability of survey's results. Therefore, the findings cannot be seen to represent the wider student population. Finally, due to proximity a higher proportion of college surveys were completed by students attending Arizona State University compared to the other participating colleges.

CONCLUSION

In conclusion, this study suggests awareness of podiatric medicine among high school and college students is poor. Further research is required to explore the reasons podiatry is overlooked as a career and how to maximize recruitment in future generations. Larger sample sizes and nationwide questionnaires may also be implemented to elicit significant statistical findings that better represent the general population.

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ACKNOWLEDGEMENTS: This study was conducted in association with the Arizona College of Podiatric Medicine. A special thank you to the Arizona Department of Education and Andrew Flaherty for assistance with survey distribution.

Financial Disclosure: None reported.

Conflict of Interest: None reported.

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Figure 1. Survey Tool

1) Which best describes you?	<input type="radio"/> High School Student <input type="radio"/> College Student
2) How would you describe your knowledge of podiatry? Would you say it is...	<input type="radio"/> Excellent <input type="radio"/> Very Good <input type="radio"/> Good <input type="radio"/> Fair <input type="radio"/> Poor
3) Podiatrists specialize in diseases of children.	<input type="radio"/> True <input type="radio"/> False <input type="radio"/> Unsure
4) Podiatrists can do surgery.	<input type="radio"/> True <input type="radio"/> False <input type="radio"/> Unsure
5) Podiatric medical school is a 2 year graduate school program.	<input type="radio"/> True <input type="radio"/> False <input type="radio"/> Unsure
6) Podiatrists can only work in private practice.	<input type="radio"/> True <input type="radio"/> False <input type="radio"/> Unsure
7) Completion of a residency program is required to be a podiatrist.	<input type="radio"/> True <input type="radio"/> False <input type="radio"/> Unsure
8) If you are reading this question, answer false.	<input type="radio"/> True <input type="radio"/> False <input type="radio"/> Unsure

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Table 1. Comparisons for Survey Questions Overall

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Comparisons for Survey Questions Overall

	College Student (N=140)	High School Student (N=154)	Total (N=294)	p value
How would you describe your knowledge of podiatry?				0.265
Excellent	2 (1.4%)	1 (0.6%)	3 (1.0%)	
Very Good	5 (3.6%)	6 (3.9%)	11 (3.7%)	
Good	25 (17.9%)	15 (9.7%)	40 (13.6%)	
Fair	41 (29.3%)	44 (28.6%)	85 (28.9%)	
Poor	67 (47.9%)	88 (57.1%)	155 (52.7%)	
Podiatrists specialize in diseases of children.				0.563
TRUE	13 (9.3%)	10 (6.5%)	23 (7.8%)	
FALSE	76 (54.3%)	81 (52.6%)	157 (53.4%)	
Unsure	51 (36.4%)	63 (40.9%)	114 (38.8%)	
Podiatrists can do surgery.				0.847
TRUE	59 (42.1%)	69 (44.8%)	128 (43.5%)	
FALSE	14 (10.0%)	13 (8.4%)	27 (9.2%)	
Unsure	67 (47.9%)	72 (46.8%)	139 (47.3%)	
Podiatric medical school is a 2-year graduate school program.				0.005
TRUE	20 (14.3%)	11 (7.1%)	31 (10.5%)	
FALSE	49 (35.0%)	37 (24.0%)	86 (29.3%)	
Unsure	71 (50.7%)	106 (68.8%)	177 (60.2%)	
Podiatrists only work in private practice.				0.135
TRUE	16 (11.4%)	13 (8.4%)	29 (9.9%)	
FALSE	63 (45.0%)	56 (36.4%)	119 (40.5%)	
Unsure	61 (43.6%)	85 (55.2%)	146 (49.7%)	
Completion of a residency program is required to be a podiatrist.				0.276
TRUE	62 (44.3%)	57 (37.0%)	119 (40.5%)	
FALSE	9 (6.4%)	7 (4.5%)	16 (5.4%)	
Unsure	69 (49.3%)	90 (58.4%)	159 (54.1%)	

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Table 2. Comparisons of Perceived vs. Actual Questions

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Comparisons of Perceived vs. Actual Questions

	Good and higher (N=54)	Fair (N=85)	Poor (N=155)	Total (N=294)	p value
Podiatrists specialize in diseases of children.					< 0.001
TRUE	6 (11.1%)	6 (7.1%)	11 (7.1%)	23 (7.8%)	
FALSE	39 (72.2%)	60 (70.6%)	58 (37.4%)	157 (53.4%)	
Unsure	9 (16.7%)	19 (22.4%)	86 (55.5%)	114 (38.8%)	
Podiatrists can do surgery.					< 0.001
TRUE	37 (68.5%)	45 (52.9%)	46 (29.7%)	128 (43.5%)	
FALSE	5 (9.3%)	11 (12.9%)	11 (7.1%)	27 (9.2%)	
Unsure	12 (22.2%)	29 (34.1%)	98 (63.2%)	139 (47.3%)	
Podiatric medical school is a 2-year graduate school program.					< 0.001
TRUE	5 (9.3%)	13 (15.3%)	13 (8.4%)	31 (10.5%)	
FALSE	31 (57.4%)	26 (30.6%)	29 (18.7%)	86 (29.3%)	
Unsure	18 (33.3%)	46 (54.1%)	113 (72.9%)	177 (60.2%)	
Podiatrists only work in private practice.					< 0.001
TRUE	10 (18.5%)	6 (7.1%)	13 (8.4%)	29 (9.9%)	
FALSE	30 (55.6%)	49 (57.6%)	40 (25.8%)	119 (40.5%)	
Unsure	14 (25.9%)	30 (35.3%)	102 (65.8%)	146 (49.7%)	
Completion of a residency program is required to be a podiatrist.					< 0.001
TRUE	32 (59.3%)	43 (50.6%)	44 (28.4%)	119 (40.5%)	
FALSE	3 (5.6%)	6 (7.1%)	7 (4.5%)	16 (5.4%)	
Unsure	19 (35.2%)	36 (42.4%)	104 (67.1%)	159 (54.1%)	