

Are medical students biased toward chronic pain patients?

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Background: Little research has been done into exploring medical students' perspectives of chronic pain patients despite increasing media attention on the opioid epidemic and their encounters during medical school.

Methods: To investigate, all medical students at Michigan State University College of Human Medicine were emailed an invitation to voluntarily participate in an online survey. Students were randomized between two identical patient vignettes, one was the control and the other was identical with the exception of a history of chronic back pain and opioid dependence. Students were then asked a series of questions regarding their perceptions, biases, and attitudes towards the patient in their vignette. Eleven questions were asked using a 0-10 scale.

Results: Results between the control and pain patient were quantified using an unpaired t-test. Students rated the chronic pain patient worse than the control in 8 of the 11 questions. There was no significant difference between the control and pain patient in the remaining 3 questions.

Discussion: Our survey showed that medical students had more negative perceptions of chronic pain patients in terms of their health, self-care, self-discipline, and compliance. Students believed a chronic pain patient would require higher levels of patience, be more annoying, and students felt less positive towards a chronic pain patient compared to a control. Although these results may not correlate with clinical differences in practice, medical schools should be aware of how medical students' perceptions of chronic pain patients could affect the quality of care provided as future physicians.

Introduction

Medical students, who are destined to encounter pain-related complaints in practice,¹ often have little personal or medical knowledge of pain prior to matriculation. Students may be more likely to develop their understanding of chronic pain from media consumption and by picking up cues from physicians they work with in medical school. Over the last decade, the media has focused on the opioid epidemic, which has shaped our national understanding of chronic pain and pain treatment. In addition a student's perception could also be

contributed to working one-on-one with attending physicians whose own biases may shape a student's schema of a patient population. And, often times primary care providers are more biased towards chronic pain patients.² Bias being defined as an "inclination or prejudice for or against one person or group, especially in a way considered to be unfair."² Reasons cited by primary care providers for less positive feelings towards chronic pain patients include, difficult patient interactions,³ comorbid psychological issues,⁴ requiring more time,⁴ worries about dependence and addiction,⁴ and compliance.⁴

While primary care providers feel more negative towards chronic pain patients, medical students are not bound by the same patient-provider relationship as physicians, nor face any prescribing scrutiny.

Despite the lack of quantitative studies establishing medical students have a negative perception towards chronic pain patients, there have been preliminary evidence supporting this theory. In a qualitative review of forty-four first year medical student journals, researchers found 75% of references to pain patients were negative, noting concerns about truthfulness and opioid prescribing.⁵ Other studies examined medical students' judgment of the level of pain in chronic pain patients using differing degrees of medical evidence, empathy, and accountability in vignettes and found that these variables can influence students' perception of chronic pain patients.^{6,7} Finally, in an interview with eight medical students, researchers at the University of Toronto reported that students working with chronic pain patients found their experiences frustrating due to the incurable nature of chronic pain and believed those encounters held little educational value.⁸

Methods

In order to address the question 'Are medical students biased towards chronic pain patients?' an online survey was developed. The study qualified for exemption by the Michigan State University IRB. All medical students (year 1 through year 4) at Michigan State University College of Human Medicine were emailed an invitation to voluntarily participate in an online survey through Qualtrics.

Although a few studies have analyzed medical student judgement towards chronic pain patients, none had developed a questionnaire to investigate medical student bias towards chronic pain patients versus a control, so our questionnaire was modeled after a study assessing medical student bias towards patients with obesity.⁹ The survey was divided into two identical vignettes, one was the control patient and the other included a history of chronic back pain and long-term opioid use (See Figure 1 and Figure 2 in appendix). Students were randomized into one of the two patient vignettes. After reading the patient

vignette prompt, students were asked a series of questions regarding their thoughts on the vignette patient. Eleven questions were asked regarding students' perceptions of the patient in the vignette using a 0-10 scale. Questions were meant to assess differences in students' perceptions, biases, and attitudes towards chronic vs. non-chronic pain patients. Questions asked included the following:

1. Estimate the health of the patient
2. Rate the patient's level of pain
3. How well does the patient take care of himself?
4. How self-disciplined is the patient?
5. Rate the seriousness of the medical problem
6. How much of a waste of time is this patient encounter?
7. How much patience will be required during this encounter?
8. How annoying can this encounter become?
9. What is your personal desire to help this patient?
10. What is the likelihood that the patient will comply with medical advice?
11. What is your overall level of positivity towards the patient?

Results

Up to 128 students responded to the chronic pain patient survey and up to 129 different students responded to the control patient survey. Using GraphPad, an unpaired t-test for each question was run to assess statistical significance between the means.

The results were extremely significant when students rated the chronic pain patient poorer in terms of health ($p = 0.0001$, $t = 6.6930$, $df = 255$), worse self-care ($p = 0.0012$, $t = 3.2779$, $df = 253$), requiring a higher level of patience during the encounter ($p = 0.0002$, $t = 3.7609$, $df = 252$), and lower positivity towards the chronic pain patient ($p = 0.0004$, $t = 3.5788$, $df = 250$). There were additional statistically significant differences as students rated the chronic pain patient as having lower self-discipline ($p = 0.0475$, $t = 1.9917$, $df = 252$), causing a higher level of annoyance ($p = 0.0148$, $t = 2.4537$, $df = 253$), and poorer compliance ($p =$

0.0048, $t = 2.8435$, $df = 250$). Students also rated the chronic pain patient as having higher amount of acute pain compared to the control ($p = 0.0001$, $t = 4.7258$, $df = 252$). There was no difference in medical students' desire to help ($p = 0.1992$, $t = 1.2873$, $df = 254$), feeling the encounter is a waste of time ($p = 0.3368$, $t = 0.9623$, $df = 254$), or assessing the seriousness of an acute presentation ($p = 0.297$, $t = 1.0451$, $df = 253$) between the chronic pain and control patient.

Graphs of response data for each question are located in the appendix, Figures 3-13.

Discussion

Pain-related complaints are one of the leading causes for doctor visits in the United States.¹ In addition, there has been increasing media attention surrounding chronic pain and the opioid epidemic. Our survey showed that medical students had more negative perceptions of chronic pain patients in terms of their health, self-care, self-discipline, and compliance. Students felt a chronic pain patient would require higher levels of patience, be more annoying, and students felt less positive towards a chronic pain patient compared to a control.

There were some limitations to this study. As the experience, understanding, and perception of pain are multifactorial there is endless amounts of both qualitative and quantitative data that can be gathered on the topic. For the purposes of a narrow study, this survey exclusively examined students' perceptions of a chronic pain patient versus a patient without chronic pain. In addition, the survey did not assess student against provider attitudes regarding chronic pain patients, and therefore there is no data measuring the magnitude of difference between student and medical provider bias. Finally, the online questionnaire did not stratify for gender, age, or medical student year, so further understanding of how gender, age, and clinical experiences shape perceptions cannot be deduced from this data.

In addition, this study did not assess if there would be a difference in future patient care based on student bias. Nevertheless, a previous study has

shown that primary care providers who are biased towards chronic pain patients are more likely to under-treat and mismanage these patients.¹² Although our results may not correlate with clinical differences in practice, medical schools should be aware of how medical students' perceptions of chronic pain patients could affect the quality of care provided as future physicians.

We advocate that medical schools, residencies, and physicians be mindful of stigmas towards chronic pain patients, and incorporate chronic pain concepts into an educational curriculum. Addressing this pervasive stigma in the medical community may be an important first step towards treating the millions of patients who suffer from chronic pain and effectively combating the opioid epidemic.



Artist: Jonnell Small
Harvard University, Chemical Biology

Appendix

Figure 1: Control vignette

By completing the survey you voluntarily agree to participate in this research project.

The survey participation is anonymous and voluntary and you can withdraw at any time. The survey is for research purposes only. The risks of completing the survey are minimal, but could include anxiety while reflecting on the questions.

If you have questions or concerns regarding this study, please contact the research study team at pourzang@msu.edu. If you have concerns about your role and rights as a research participant, you may contact MSU's Human Research Protection Program at (517) 355-2190 or email irb@msu.edu.

Patient Information

Name: Anthony Brown	DOB: 10/15/1963
Gender: Male	Age: 55

Vitals:		
Height: 6 ft., 0 in.	Temp: 98.4	
Weight: 180 lbs.	BP: 120/70	
BMI: 24.4	Pulse: 74	

Problem List:

1. Hypertension since 2013
2. Benign prostatic hyperplasia since 2013

Current Medications:

1. Hydrochlorothiazide (HCTZ) 25 mg., BID
2. Tamsulosin (Flomax) 0.4 mg., QD

Comments: Patient is coming in for new onset right knee pain.

Figure 2: Chronic pain vignette

By completing the survey you voluntarily agree to participate in this research project.

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Patient Information

Name: Anthony Brown	DOB: 10/15/1963
Gender: Male	Age: 55

Vitals:		
Height: 6 ft., 0 in.	Temp: 98.4	
Weight: 180 lbs.	BP: 120/70	
BMI: 24.4	Pulse: 74	

Problem List:

1. Chronic low back pain since 2012
2. Hypertension since 2013
3. Benign prostatic hyperplasia since 2013

Current Medications:

1. Hydrocodone/ Acetaminophen (Norco) 7.5-325 mg., TID
2. Hydrochlorothiazide (HCTZ) 25 mg., BID
3. Tamsulosin (Flomax) 0.4 mg., QD

Comments: Patient is coming in for new onset right knee pain.

Figure 3: Graph for survey question 1

Q1: Estimate the health of the patient (0= poor, 10= excellent)
RESULTS: Control mean: 7.05, Pain mean: 6.06, $p=0.0001$ (SIGNIFICANT).

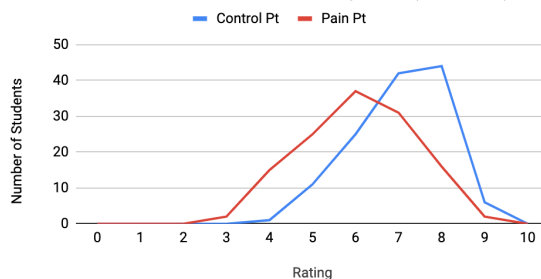


Figure 4: Graph for survey question 2

Q2: Rate the patient's level of pain (0=none, 10= extreme)
RESULTS: Control mean: 4.98, Pain mean: 5.85, $p=0.0001$ (SIGNIFICANT).

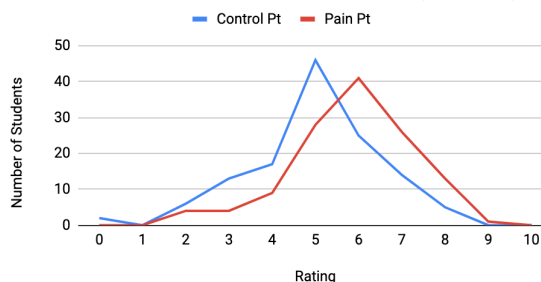


Figure 5: Graph for survey question 3

Q3: How well does the patient take care of himself? (0=poor care, 10= excellent care)
RESULTS: Control mean: 7.19, Pain mean 6.50, $p=0.0012$ (SIGNIFICANT).

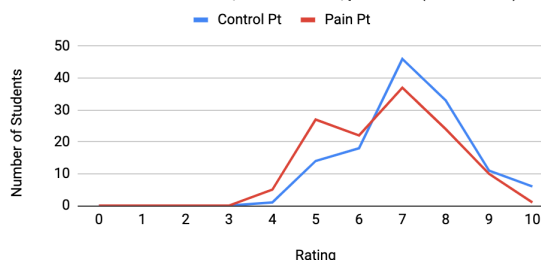


Figure 6: Graph for survey question 4

Q4: How self-disciplined is the patient? (0=poor, 10=excellent)
RESULTS: Control mean: 6.89, Pain mean: 6.55, $p=0.0475$ (SIGNIFICANT).

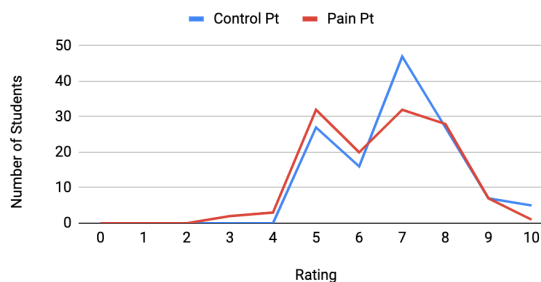


Figure 7: Graph for survey question 5

Q5: Rate the seriousness of the medical condition. (0= not a problem, 10= extremely serious)

RESULTS: Control mean: 4.89, Pain mean: 5.08, $p = 0.297$ (not significant).

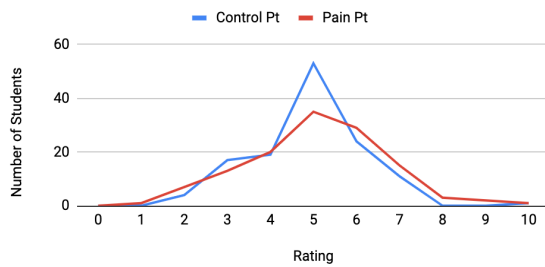


Figure 8: Graph for survey question 6

Q6: How much of a waste of time is this patient encounter? (0=not a waste, 10= complete waste)

RESULTS: Control mean: 0.90, Pain mean: 1.08, $p=0.3368$ (not significant).

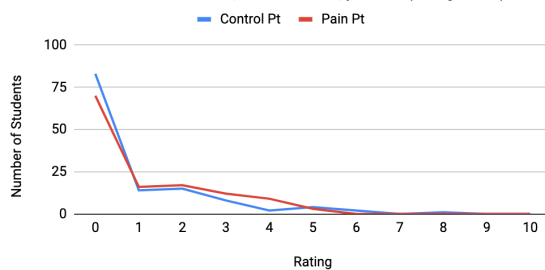


Figure 9: Graph for survey question 7

Q7: How much patience will be required during this encounter? (0=none, 10=extreme)

RESULTS: Control mean: 3.69, Pain mean: 4.60, $p=0.0002$ (SIGNIFICANT).

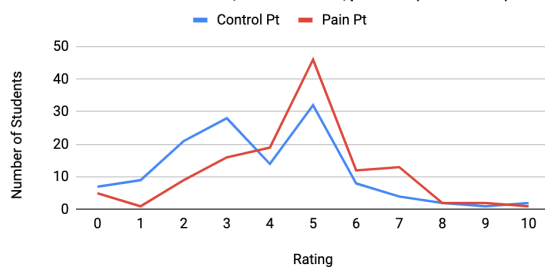


Figure 10: Graph for survey question 8

Q8: How annoying can this encounter become? (0=not annoying, 10= very)

RESULTS: Control mean: 3.19, Pain mean: 3.98, $p=0.0148$ (SIGNIFICANT).

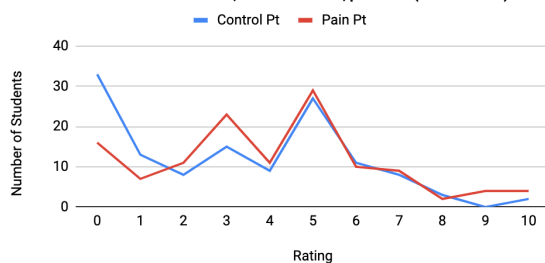


Figure 11: Graph for survey question 9

Q9: What is your personal desire to help this patient? (0=none, 10=absolute)

RESULTS: Control mean: 8.33, Pain mean: 8.05, $p=0.1992$ (not significant).

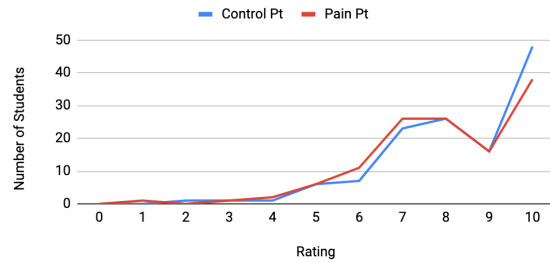


Figure 12: Graph for survey question 10

Q10: What is the likelihood that the patient will comply with medical advice? (0=no chance, 10= assured)

RESULTS: Control mean: 7.36, Pain mean: 6.86, $p=0.0048$ (SIGNIFICANT).

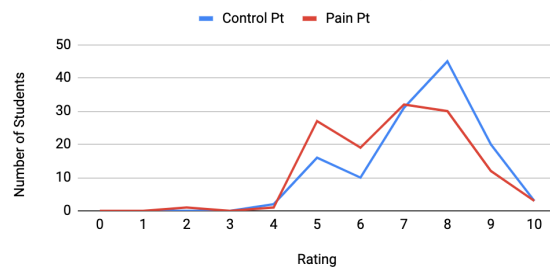
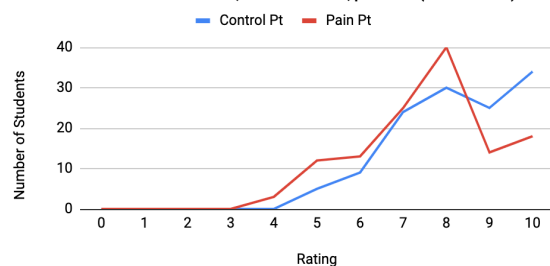


Figure 13: Graph for survey question 11

Q11: What is your overall level of positivity towards the patient? (0=none, 10= complete)

RESULTS: Control mean: 8.28, Pain mean: 7.61, $p=0.0004$ (SIGNIFICANT).



REFERENCES

1. Sauver JLS, Warner DO, Yawn BP, et al. Why do patients visit their doctors? Assessing the most prevalent conditions in a defined US population. *Mayo Clin Proceedings*. 2013; 88(1): 56-67.
2. Pain management and opioid abuse: a public health concern. American Academy of Family Physicians (AAFP). July 2012. https://www.aafp.org/dam/AAFP/documents/patient_care/pain_management/opioid-abuse-position-paper.pdf. Accessed June 29, 2019.
3. Oxford dictionary. <https://www.lexico.com/en/definition/bias>. Accessed November 20, 2019.

4. Matthias MS, Parpart AL, Nyland KA, et al. The patient-provider relationship in chronic pain care: physicians' perspectives. *Pain Med*. 2010;11(11):1688-1697.
 5. Chen JT, Fagan MJ, Diaz JA, Reinert SE. Is treating chronic pain torture? Internal medicine residents' experiences with patients with chronic nonmalignant pain. *Teach Learn Med*. 2007; 19(2):101-105.
 6. Evans L, Whitham JA, Trotter DR, Filtz KR. An evaluation of family medicine residents' attitudes before and after a PCMH innovation for patients with chronic pain. *Fam Med*. 2011; 43(10):702-711.
 7. Corrigan, C., et al. What can we learn from first-year medical students' perception of pain in the primary care setting?. *Pain Med* 2011;12(8):1216-1222.
 8. Chibnall, JT, Tait RC, Jovel A. Accountability and empathy effects on medical students' clinical judgments in a disability determination context for low back pain. *J Pain*. 2014; 15(9):915-924.
 9. Chibnall, JT, Tait, RC, Ross LR. The effects of medical evidence and pain intensity on medical student judgments of chronic pain patients. *J Behav Med*. 1997; 20(3):257-271.
 10. Rice, K., et al. Medical trainees' experiences of treating people with chronic pain: a lost opportunity for medical education. *Acad Med*. 2018; 93(5):775-780.
 11. Persky, S., Eccleston, C. Medical student bias and care recommendations for an obese versus non-obese virtual patient. *Int J Obes* 2011; 35, 728-735.
 12. Potter M, Schafer S, Gonzalez-Mendez E, et al. Opioids for chronic nonmalignant pain. Attitudes and practices of primary care physicians in the UCSF/Stanford Collaborative Research Network. University of California, San Francisco. *J Fam Pract*. 2001; 50(2):145-151.
 13. Time to listen: what the experts have to say about safe opioid prescribing and addiction treatment. *CME Outfitters*. <https://www.cmeoutfitters.com/time-to-listen-what-the-experts-have-to-say-about-safe-opioid-prescribing-and-addiction-treatment/>. Accessed June 1, 2019.
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